THE IRON AGE

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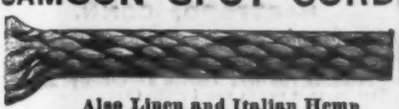

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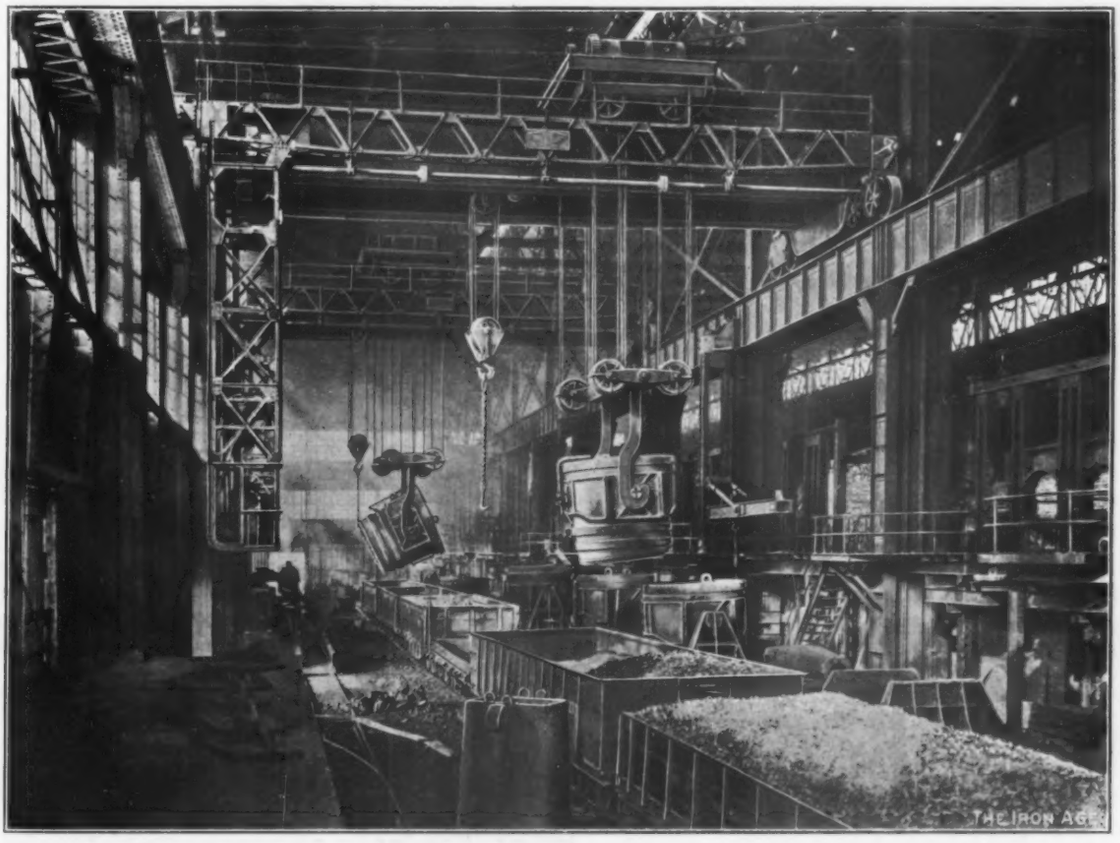
THE IRON AGE

New York, Thursday, March 2, 1905.

The Illinois Steel Company's Additions.

NEW OPEN HEARTH STEEL WORKS AND BLOOMING AND STRUCTURAL MILLS.

To keep pace with the rapidly increasing demands of Western markets for structural shapes the Illinois Steel Company is adding to its plant at South Chicago, Ill., a complete chain of steel works and mills, as follows: Open hearth steel works containing seven 50-ton furnaces, a 40-inch blooming mill and a 28-inch structural steel mill. The additions include independent gas producer systems, a new boiler house, pump house, coal handling machinery and other modern accessories of a steel works. The new steel works will increase the present annual capacity of the company's plant at South Chicago by 250,000 gross tons of open hearth steel, and it will add to its finished product an annual capacity of 150,000 tons of structural shapes.



The Illinois Steel Company's New Open Hearth Steel Works.—Pouring Side.

On this page is shown a view in the new open hearth steel works on the pouring side.

General Plan.

As will be seen by the ground plan illustration, Fig. 2, the open hearth steel works occupies one building, while the blooming and structural mills occupy jointly an adjacent structure. Each of these has its own gas producers.

The new works occupies the northern end of the general inclosure of the company's plant and is separated from the blast furnaces of the old works by a slip entering Lake Michigan. The old and new works are connected by standard gauge railway tracks passing around the western end of the slip. One of these lines will be used chiefly for conveying hot metal from the old blast furnaces to the new open hearth steel works, a distance of about 2000 feet, 20-ton ladle cars being used for the purpose.

East and north of the open hearth steel works and between it and the lake shore is a stock yard 600 x 1000 feet, served by 8 standard gauge and 10 narrow gauge railroad tracks. Ore, scrap, limestone and pig iron are brought in on the standard gauge tracks and either stored in their proper bins or unloaded directly to charging boxes on narrow gauge cars. The loaded charging boxes are weighed on track scales and transferred by locomotives to the charging floor of the open hearth works.

The Open Hearth Steel Works.

This department, of which a plan is shown in Fig. 3, consists of seven 50-ton stationary type open hearth furnaces built by the company. The hearths of these furnaces are each 14 feet wide by 32 feet long inside. The construction is exceptionally massive, concrete and steel being used for foundations and for cinder pits. The bottoms of the uptakes are furnished with slag pockets, which can easily be cleaned by knocking out false arches. The regenerative chambers are located beneath the steel and concrete charging floor and away from the furnaces.

The air chambers are 10 feet 10 inches wide by 22 feet long, 15 feet 7 inches high, and the gas chambers are 7 feet 11 inches wide by 22 feet long, 15 feet 7 inches high. The hydraulically operated reversing valves are also located below the charging floor, the flues entering the base of the stack. The charging sides of the furnaces are furnished with three charging doors and three inspection or repair doors, and the back of the

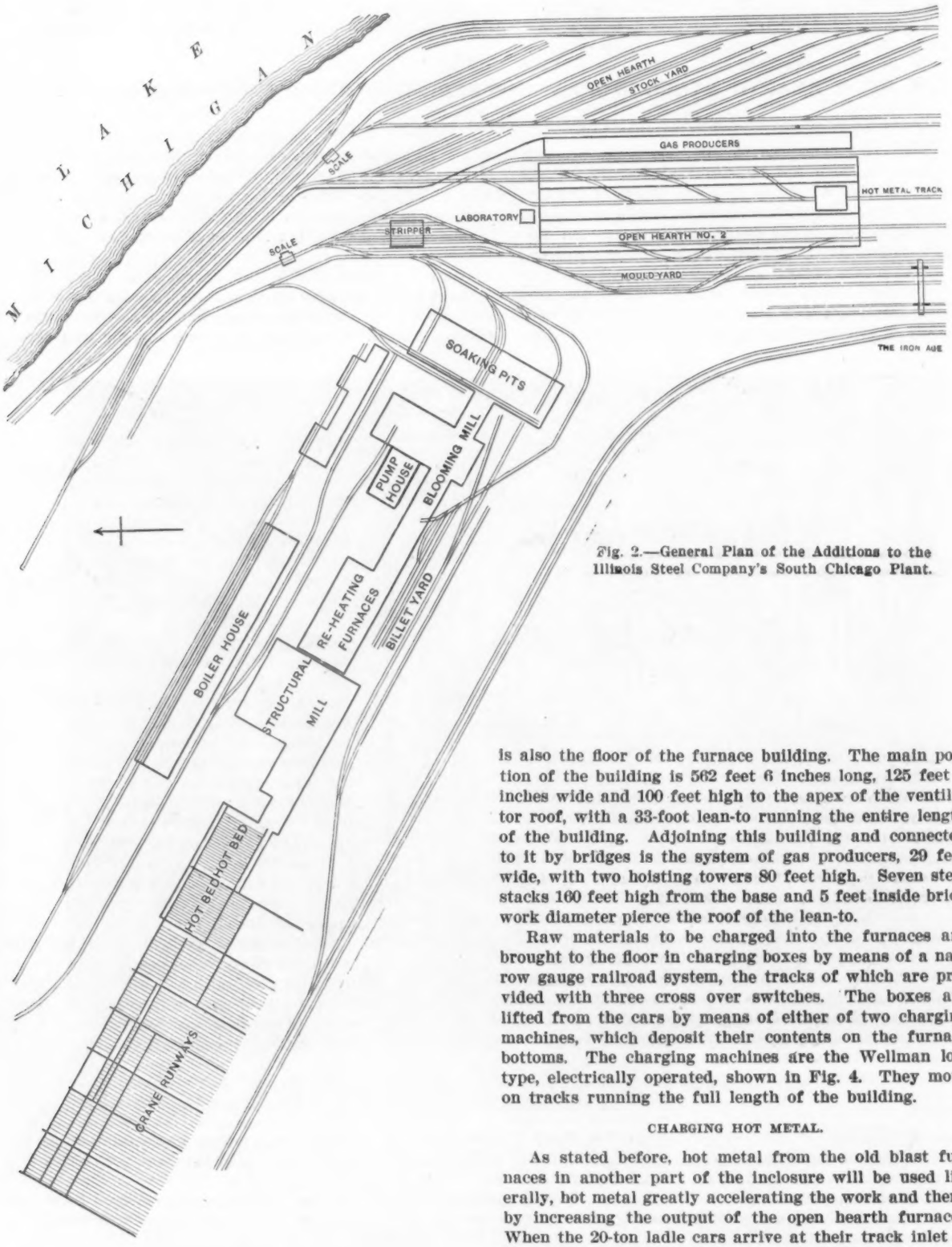


Fig. 2.—General Plan of the Additions to the Illinois Steel Company's South Chicago Plant.

furnace with two small doors. Access is had to the tapping holes by an unusually liberal extension of the charging floor back of the furnace. In fact, the furnaces are accessible on every side, the whole works being marked by liberality in the matter of space. All the large doors and jambs are water cooled. The doors are lifted by hydraulic cylinders operated from nests of valves, two furnaces being operated from each nest. Ingot molds are provided for the following sizes: 18 x 20, 22 x 25, 25 x 25 and 15 x 29 inches, the weight ranging from 6000 to 8000 pounds each.

The building is exceptionally massive and was designed and erected by the North Works of the company. The adjoining land east of the open hearth building is being filled up to the level of the charging floor, which is 13 feet above the pouring floor. This will facilitate the handling of materials to the charging floor, which is also the floor of the furnace building. The main portion of the building is 562 feet 6 inches long, 125 feet 7 inches wide and 100 feet high to the apex of the ventilator roof, with a 33-foot lean-to running the entire length of the building. Adjoining this building and connected to it by bridges is the system of gas producers, 29 feet wide, with two hoisting towers 80 feet high. Seven steel stacks 160 feet high from the base and 5 feet inside brick work diameter pierce the roof of the lean-to.

Raw materials to be charged into the furnaces are brought to the floor in charging boxes by means of a narrow gauge railroad system, the tracks of which are provided with three cross over switches. The boxes are lifted from the cars by means of either of two charging machines, which deposit their contents on the furnace bottoms. The charging machines are the Wellman low type, electrically operated, shown in Fig. 4. They move on tracks running the full length of the building.

CHARGING HOT METAL.

As stated before, hot metal from the old blast furnaces in another part of the inclosure will be used liberally, hot metal greatly accelerating the work and thereby increasing the output of the open hearth furnaces. When the 20-ton ladle cars arrive at their track inlet at the south end of the building they are weighed on track scales and the hot metal is poured into a 37½-ton ladle, by means of which it is transferred to the furnaces. This pouring ladle is handled by a 60-ton 7-motor double trolley electrical traveling crane furnished by the Whiting Foundry Equipment Company, Harvey, Ill. This crane has a span of 61 feet 6 inches and a lift of 35 feet. The main trolley has a 60-ton hoist operated by two 75 horsepower railroad type motors in series parallel and an auxiliary trolley of 10 tons capacity. The two drums are so

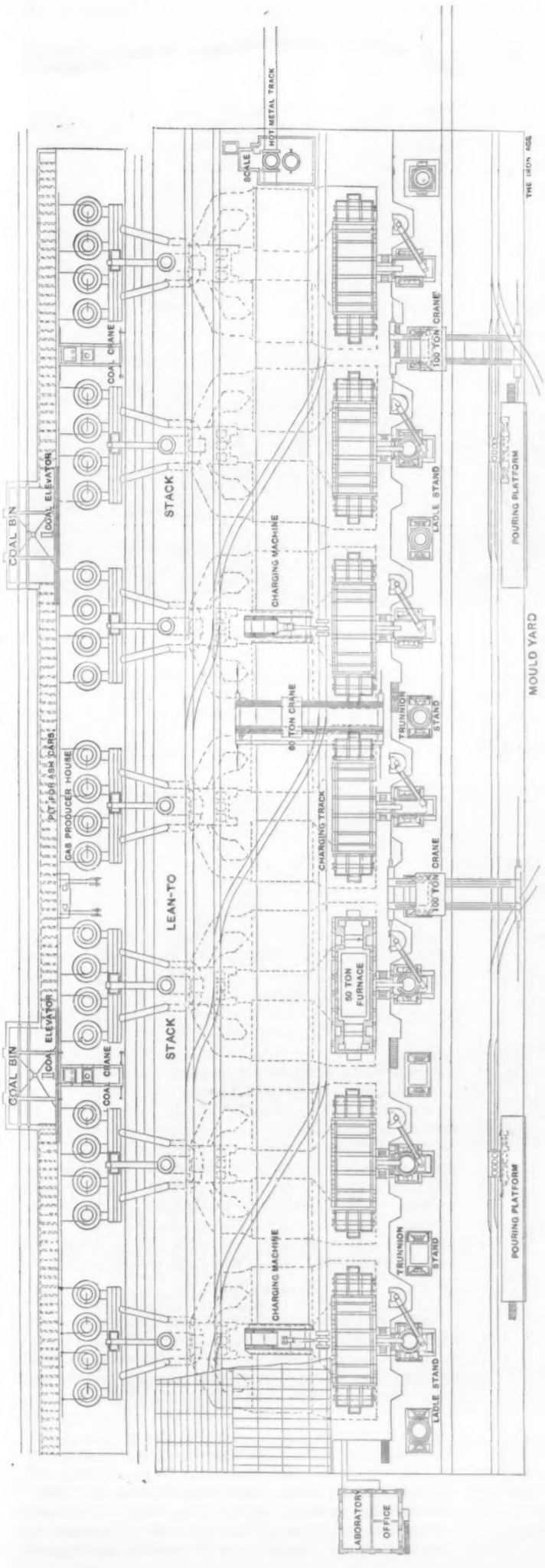


Fig. 3.—Plan of the Illinois Steel Company's New Open Hearth Steel Works.

arranged that the hoisting ropes fall outside of the bridge girders. The hoisting ropes are double reeved independently, so that if one rope should be damaged the other would still stand the load. The auxiliary trolley runs between girders and is used for tipping the ladle at the furnace mouth and also for repairs. To facilitate charging the hot metal a detachable spout is inserted into the door of the open hearth furnace, the spout resting on a small stand, which is moved from furnace to furnace. The charging floor has the unusually great width of 75 feet, enabling the free handling of materials and preventing congestion.

THE POURING SIDE.

The pouring floor, shown in the front illustration, is 60 feet wide and 562 feet 6 inches long and is 13 feet lower than the charging floor. It is spanned by two Wellman double trolley ladle cranes, each of 55 feet span, and each provided with a main trolley of 100 tons capacity and an auxiliary trolley of 25 tons capacity. The bridge travel is 100 feet per minute, and the tracks on which it is run are 39 feet 5 inches above the level of the floor. The main hoist has a 27-foot lift. These cranes serve the seven open hearth furnaces. On the floor, running from end to end of the building, are narrow gauge and standard gauge tracks, the narrow gauge being used for ingot mold cars and the broad gauge for carrying skulls, ladles, &c., outside of the building and for other purposes.

Two pouring platforms are provided, each equipped with hydraulic car pushers. At each furnace is installed a 10-ton hydraulic jib crane for handling spouts, platforms, &c. These cranes were built by the Garrison Foundry Company, Pittsburgh, Pa. The ladle pits below each furnace are only 3 feet in depth, the shallow depth facilitating the rapid and economical handling of hot cinder and slag. The cinder is loaded on cars on the standard gauge track previously referred to by the hydraulic jib cranes. When either of the ladles, which are of 55 tons capacity, is filled with molten metal it is lifted from its rest by the 100-ton crane, which conveys it to the pouring platform, where it is poured, the same crane either returning it to its stand or carrying it to the repair pit as necessity requires. The two drums of the 100-ton trolley hoist are spread so as to permit the cables and hangers to pass down on the outside of the bridge girders, thus allowing the auxiliary hoist to be placed between the girders and to travel the full span of the crane bridge, enabling the craneman to tip the ladle in either direction.

To the west of the open hearth building is the mold yard, the south end of which is spanned by a 15-ton gantry crane furnished by the Niles-Bement-Pond Company. The span of this crane is 70 feet, and it has a travel of 850 feet. Broad gauge tracks also come within reach of this crane, which besides transferring molds, is used in handling scrap and other materials.

STRIPPING THE INGOT MOLDS.

From the pouring platforms the ingots are transferred by means of steam locomotives on a narrow gauge railroad to an ingot stripper situated 200 feet north of the building, shown in Fig. 5. Stripping is done by means of an electric over-

head traveling ingot stripper, 40-foot span, furnished by the Wellman-Seaver-Morgan Company, Cleveland, Ohio. From this machine the molds are returned to the mold yard west of the open hearth building for cooling, and the ingots are immediately conveyed to the soaking pits of the blooming mill adjoining to the northwest, being weighed on track scales *en route*.

Fig. 4.—The Wellman Low Type Charging Machine in the Illinois Steel Company's New Open Hearth Steel Works.

THE GAS PRODUCERS.

Gas for the open hearth furnaces is furnished by 28 10-foot Morgan continuous gas producers, provided with the George automatic feed. The battery is divided into seven units of four producers each. The advantages of automatic feeding are becoming well known. The poorer grades of coal are handled successfully and the formation of troublesome clinker is avoided. The gas produced contains a very low percentage of nitrogen and carbonic acid, and its quality may be depended on to be uniform. The handling of coal to supply these producers was long under discussion, a number of plans being considered. A plan suggested by the Morgan Construction Company, Worcester, Mass., was finally adopted, as shown in Fig. 6, which presents a transverse section through the steel works and gas producers. It consists of a building provided with two 100-ton overhead storage bins, into which the coal is deposited by a simple bucket elevator. The coal, in the first place, is brought in on a standard gauge track in

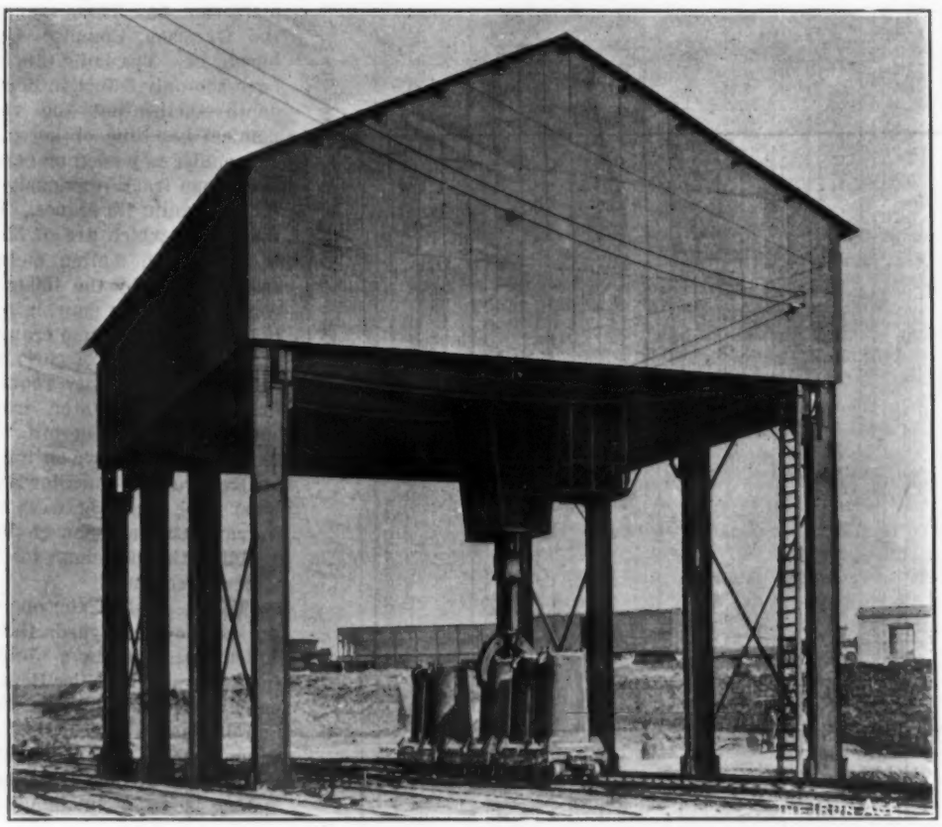


Fig. 5.—The Wellman-Seaver-Morgan Ingot Stripper at the Illinois Steel Company's New Open Hearth Steel Works.

hopper cars and dumped into concrete bins under the track, from which it is conveyed by the above mentioned bucket elevator to either of the two storage bins. The capacity and is mounted on scales. A boy occupies the crane cage, fills the crane tank from the central storage bin and discharges the coal as needed into the receiving

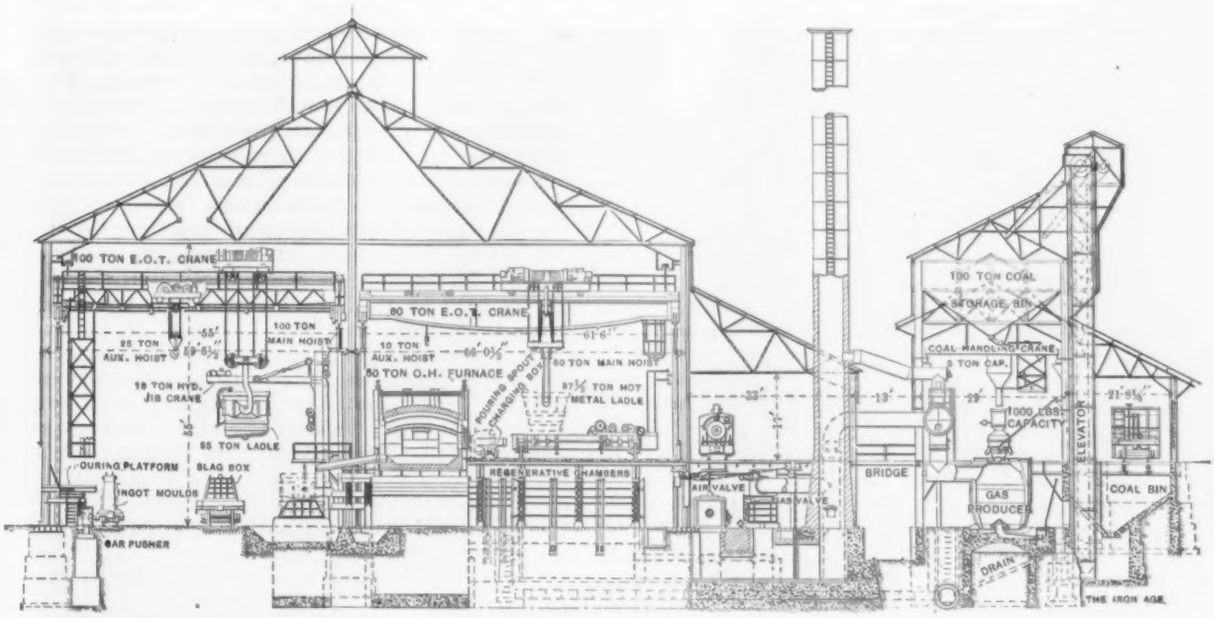


Fig. 6.—Transverse Section through the Illinois Steel Company's New Open Hearth Steel Works and Gas Producer.

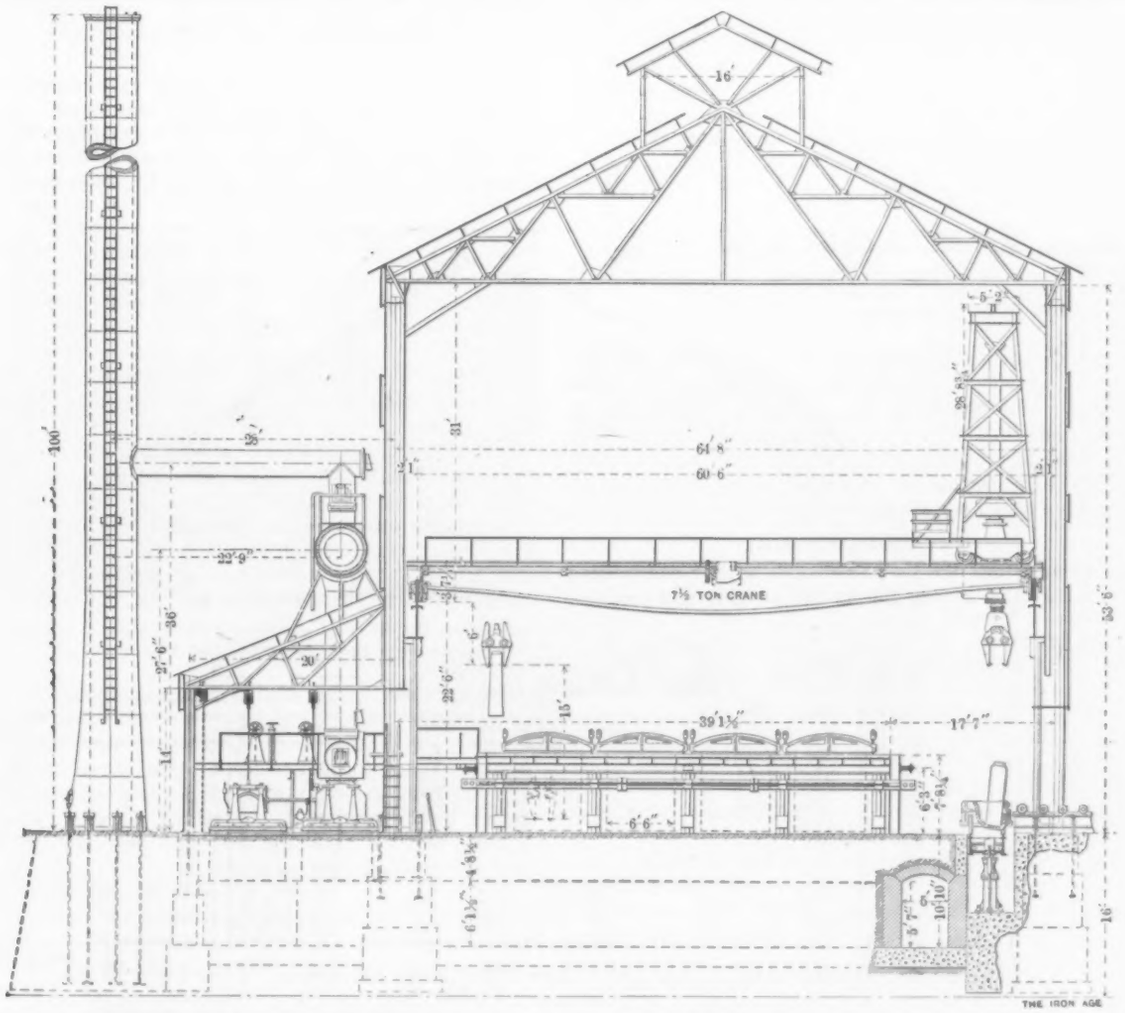


Fig. 7.—Sectional Elevation of the Soaking Pits in the Illinois Steel Company's New Blooming Mill.

coal handling machinery was erected by the Interstate Engineering Company, Cleveland, Ohio.

The coal is distributed to the producers as required by two light electric overhead traveling distributing cranes traversing the length of the building, each crane carrying a fixed hopper. The hopper is of about 5 tons hopper of the producers in lots of 1000 pounds or less. The scale beam is located in front of the crane cage, and separate coal records may be readily kept for each producer. The valves at the hopper of the producers are operated by the crane boy.

The charging crane in connection with the automatic

feeding device has proved to be a great saver of gas house labor. On the charging floor one man can easily attend three 10-foot diameter producers, while one man can remove the ashes from 15 producers. This gas house construction, with central storage bin and electric distributing crane, has been adopted as a standard by the Morgan Construction Company. Comparatively low first cost and economy in operation are claimed as its prime features. The gas from the producers is conveyed by pipes of large diameter to overhead receivers, from which it is piped to the regenerative chambers of the furnaces, the flow being regulated by Forter valves controlled by operating stands, one stand to each furnace.

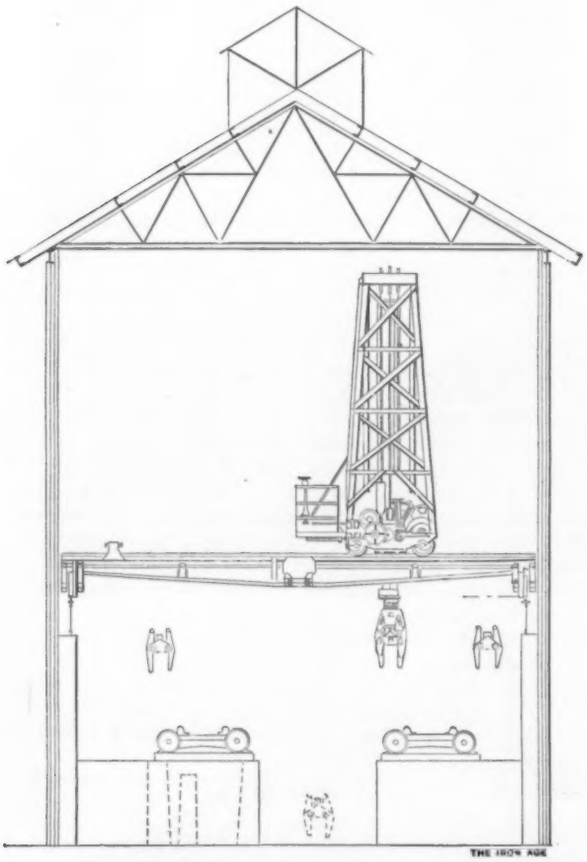


Fig. 8.—Morgan Crane Tongs Serving the Soaking Pits in the Illinois Steel Company's New Blooming Mill.

The Blooming Mill.

This building, like its neighbor, is solidly constructed from steel, with a very liberal use of steel and concrete in its foundations. It is irregular in shape, its greatest width being 266 feet 8 inches at the soaking pit end, and its length up to the reheating furnaces of the structural mill, which forms part of the same structure, being 442 feet. Including the structural mill, the building when completed will be over 900 feet long.

THE SOAKING PITS.

The portion of the mill devoted to the soaking pits is 64 feet 8 inches wide by 266 feet 8 inches long, with a lean-to 20 feet wide covering the reversing valves running the full length of the building. A sectional elevation of the structure is shown in Fig. 7. In this building are four four-hole soaking pits in two groups, each group being 39 feet 1½ inches by 40 feet 2 inches outside of the brick work and 18 feet deep. Each pit provides space for heating four 22 x 25 inch or six 18 x 20 inch ingots. In other words, 64 ingots of the larger size or 96 of the smaller size could be heated at once in this plant. Each pit has its own reversing valves, the gas valve being of the Forter type, and the air valve of the common butterfly type, and, in addition to this, air and gas are controlled independently by mushroom valves.

The ingots, received on small cars from the stripper, are hoisted and lowered into the soaking pits by means of two 7½-ton four-motor electrical overhead charging cranes built by the Morgan Engineering Company, Alliance, Ohio, shown in section in Fig. 8. These machines have all the facilities of operation of the ordinary traveling crane, possessing, besides the usual mechanical and electrical brakes, an independent slipping or safety clutch on the main hoist. This safety clutch is arranged to prevent the trolley from climbing the charging bar should the bar be driven with great force on the ingot. The automatic tongs for gripping ingots are suspended from a steel stem attached to the end of the charging bar and revolve on bronze bearings. The charging bar being balanced by counterweights in the tower, the motor has only the actual weight of the ingot to lift. Friction is reduced to a minimum, as the charging bar passes through the guides, with a stuffing box at each end having ample provision for oiling. These machines are provided with independent motors for hoisting, trolley travel, bridge travel and for operating the tongs. These cranes have a span of 60 feet 6 inches between runways and a lift of 15 feet.

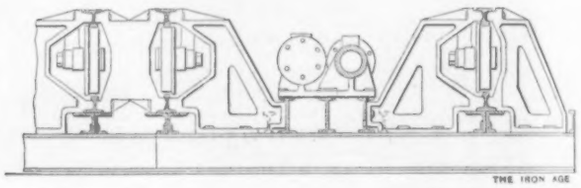


Fig. 10.—Section through Hydraulic Carriage and Soaking Pit Cover.

The tops of the pits are strengthened by a layer of heavy steel rails side by side, covered with steel plates, to prevent damage should an ingot slip from its hoist. The soaking pit covers are suspended from hydraulically operated carriages which travel on rails, Figs. 9 and 10. The method of gradual release of the covers to permit them to fall to their seats by gravity but without violence is so well illustrated in the engravings that comment is unnecessary. All covers are controlled from one pulpit by one operator.

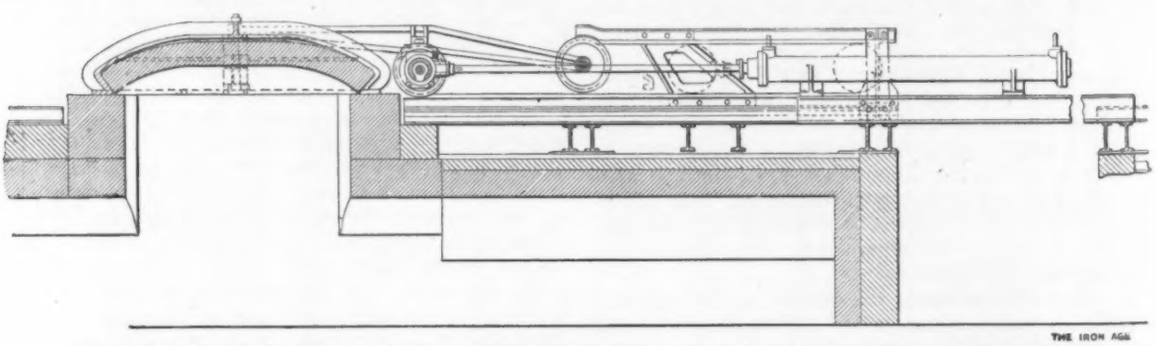


Fig. 9.—Hydraulic Carriage Operating Soaking Pit Cover in the Illinois Steel Company's New Blooming Mill.

At each end of the building, on a level with the crane, is a raised steel platform to facilitate ordinary repairs to the cranes. Two raised platforms under the lean-tos are also provided on a line with the tops of the pits, and on these platforms are located all stands for operating the valves that control the inflow of gas and

air. This construction will be of obvious convenience in repairing and caring for the valves and piping.

The ingots, after soaking, are lifted out by the charging cranes and delivered to small electric transfer cars running on a track on the general ground level. These cars convey the ingots to the approach table of the blooming mill. Gas for the soaking pits is furnished by 14 10-foot Morgan producers, duplicates of the ones described in connection with the open hearth works. The coal handling mechanism is also the same. Each of the four soaking pits has a 4-foot by 100-foot steel stack.

THE BLOOMING MILL.

In Fig. 11 is shown the 40-inch reversing blooming mill installed by the United Engineering & Foundry Company, Pittsburgh, Pa. This mill is designed to roll beam blanks as large as 12 x 15 inches and intermediate square sections down to 4-inch billets. The rolls are of cast steel and weigh 28,000 pounds each. The roll housings are made of a special mixture of air furnace iron and weigh 86,000 pounds each. The shoe plates are made especially heavy to insure great rigidity and weigh 2100 pounds per lineal foot, with a total length of 45 feet 7 inches and a table weight of 192,000 pounds. The pinions for driving the mill are steel castings with staggered teeth, 40 inches pitch diameter. The pinion housings, carriages and pinions weigh 197,000 pounds. The driving crab is of very substantial construction, weighing complete 15 tons.

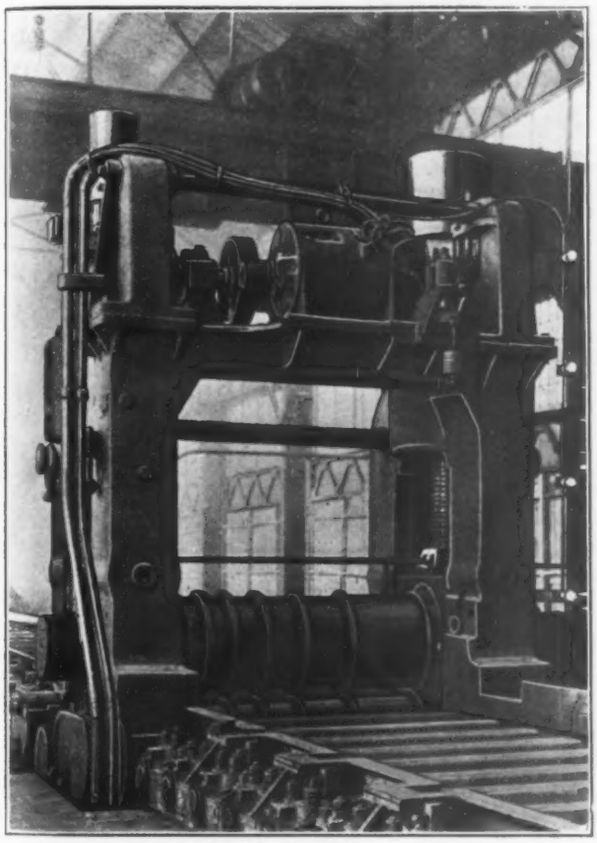


Fig. 11.—The Illinois Steel Company's New 40-inch Reversing Blooming Mill, with Electric Screw-down.

The screws for operating the top roll are of high carbon steel, 11 inches diameter and 1¾ inches pitch, and are driven by an electric screw down of a new design, operated by a 75 horse-power motor, with magnetic brake, the speed of the lift being about 10 feet per minute. The rolls are 30 inches diameter and the neck 21 inches, with an extreme opening to the rolls of 30 inches. The top roll is balanced by hydraulic cylinders, one for each housing, under constant pressure maintained by an independent accumulator. The windows of the housing are large enough to permit the changing of rolls without in any way dismantling the mill. The total length of this mill, including the engine, is 53 feet, the extreme hight above foundations 20 feet and the total weight 860,000 pounds. Its plan is shown in Fig. 12.

The front and rear mill tables are of very heavy construction, with 16-inch rollers, 96 inches long between journals. The journals of these rollers are 6 inches in diameter, and the side guards of the front table are heavy steel castings made in sections to provide against serious damage from the impact of the ingot. Both front and rear tables are 59 feet 2 inches long. The mill tables are driven by beveled gearing from line shafts direct connected to a 12 x 12 inch Crane reversing engine, one for each table. The approach table leading from the buggy track to the middle table is 70 feet long. It is divided into two parallel sections, one of which (the ingot run) is furnished with solid forged rollers 16 inches diameter, 45 inches long, at 24-inch centers, driven by miter gears by means of a geared 50 horse-power Westinghouse motor. The other section of the run, which has its rollers at 48-inch centers, is a run-out table for supporting the ends of billets or shapes in process of rolling.

After the ingot is deposited on the table from the electric buggy it is run up to the end of the switch of the table by the operator of the ingot buggy, who starts it to the mill table on receiving a signal from the roller. The roller has charge of the ingot from this time on, as he and the manipulator man operate the manipulator, the attachments of the top roll and the reversing and controlling of the table engines, all of which are governed from the roller's pulpit, located above the mill table, 45 feet from the rolls. The engineer controls the reversing engine from the same pulpit. The manipulator is of the Kennedy type. In addition, the mill is furnished with a single pronged auxiliary manipulator, which has both vertical and horizontal motions for taking care of long billets. This manipulator as well as the whole ingot run was also furnished by the United Engineering & Foundry Company. The single pronged manipulator avoids the necessity of employing a man with a wrench to help turn long bars.

THE MESTA ENGINE.

The blooming mill proper is driven by means of a twin cylinder reversing engine built by the Mesta Machine Company, Pittsburgh, Pa. The engine is of the direct connected type, the shaft being carried in three bearings. The crank shaft is a single forging with a 6-inch axial hole drilled through its entire length.

The cylinders are 55 inches diameter, 60 inches stroke, equipped with valves of the piston type. The bushings or seats for the piston valves are cast separate and are fitted in the steam chest. The piston valves are a separate piece for each end of the cylinder and are connected by the valve stem; the packing is one broad ring the width of the piston. The piston valves are operated by a reversing link motion, triple eccentrics being used to drive each link. The two outside eccentrics have the same angular advance and are in effect one eccentric. They connect through the straps and rods to the bottom end of the link, the middle eccentric to the top end of the link. This arrangement avoids all side strains, as all connections from the eccentrics to the links are made in a straight line. The links are reversed by a steam operating cylinder, the power from which is transmitted by a pair of links to the tumbling shaft. An oil check cylinder directly in line with the steam cylinder has its piston on the same rod. The valve which distributes the steam to the operating cylinder and the valve which by-passes the oil in the check cylinder are on the same stem or valve rod. This rod is controlled through a floating lever by the operator's lever and by the motion from the operating cylinder piston. With this arrangement the links can be shifted to any position by the engineer and held there without further effort.

The piston rods are of hollow forged steel. The pistons, which are of cast steel and of umbrella pattern, are held on the rods between a forged collar and a large nut. The piston rods extend through the rear cylinder head and are supported by a head with an adjustable shoe. In this way the body of the piston is carried clear of the walls of the cylinder and only the cast iron packing ring comes in contact. The slide stand for the above mentioned shoe is made so that it can be quickly moved back when the cylinder head is taken off.

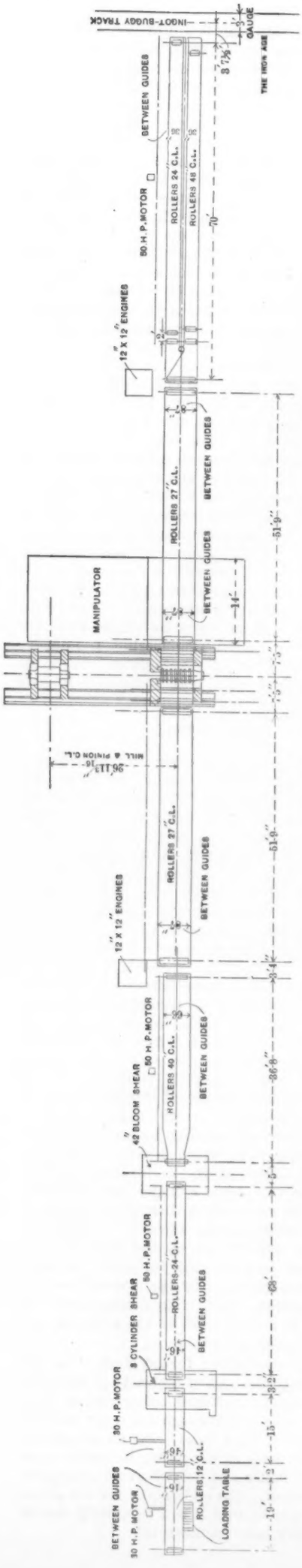


Fig. 12.—General Plan of the Illinois Steel Company's New 40-Inch Reversing Blooming Mill.

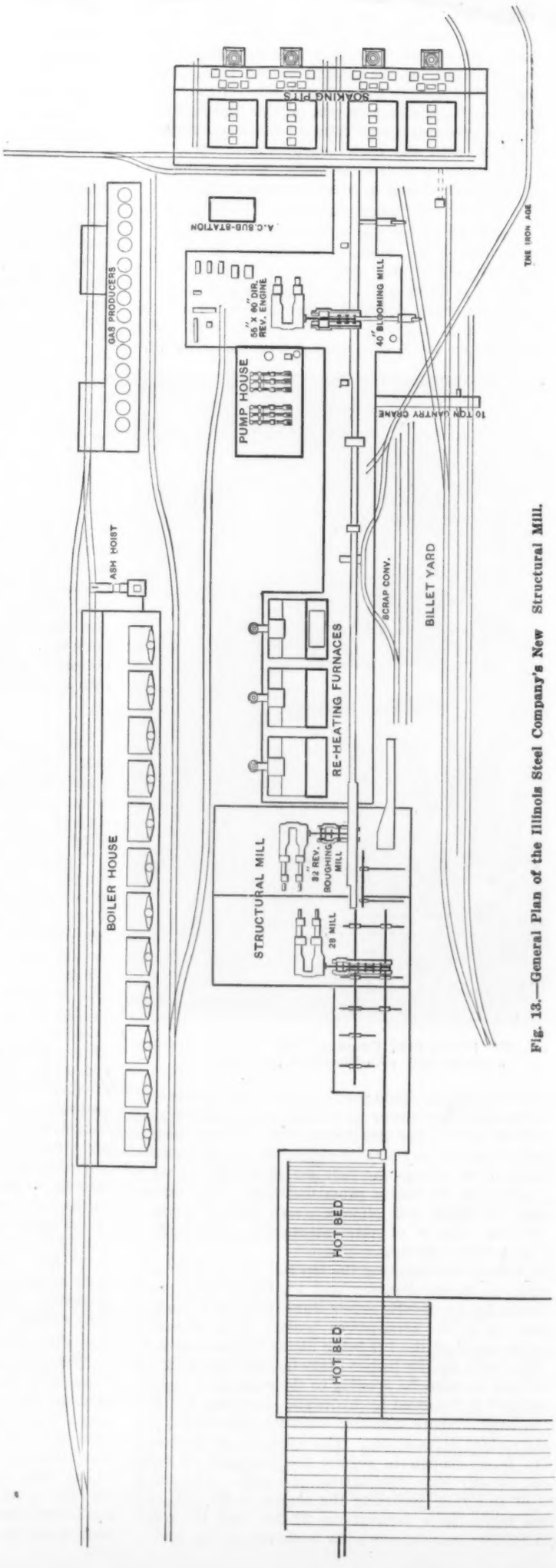


Fig. 13.—General Plan of the Illinois Steel Company's New Structural Mill.

THE SHEAR RUN.

The run between the mill and the bloom shear is divided into two sections, the first of which is 51 feet 9 inches from the center of the first to the center of the last roller. The run is 87 inches wide between guides and the rollers are set at 27-inch centers. This section is run by a 12 x 12 inch Crane type reversing engine direct connected to the table. The second section, 36 feet 8 inches between centers of first and last rollers, is 66 inches wide and has rollers at 40-inch centers. It is driven by a 50 horse-power Westinghouse motor. The second section leads the bloom up to the 42-inch hydraulic bloom shear, furnished complete with tables by the United Engineering & Foundry Company.

THE HYDRAULIC BLOOM SHEAR.

This shear has a capacity of cutting 12 x 15 inch hot blooms and is equipped with a constant pressure push back cylinder. It is located 101 feet 8 inches from the center of the blooming mill and is used for cropping off split ends of ingots and for cutting long billets in two, as well as for emergency purposes. The stroke of the shear is 19 inches and its total weight is 210,000 pounds. The shear tables are driven by direct connected electric motors. Located 72 feet 6 inches beyond this shear is a 26-inch 3-cylinder hydraulic shear, also built by the United Engineering & Foundry Company, for cutting blooms, billets, &c., to different lengths, the material passing to this shear over a roll table 46 inches wide, with rolls at 24-inch centers. This shear has a capacity of cutting material ranging from 4-inch billets up to 10 x 30 inch slabs hot. The stroke is 16 inches and has a specially designed stop, driven by an electric motor, which regulates the quantity of water used, making the shear one of the most economical of its type. The hydraulic valves are arranged so that the middle cylinder can be used on light work and all three cylinders can be used when the shear is being operated at its maximum capacity. This shear is capable of a pressure of 500 tons and has a total weight of about 150,000 pounds.

The tilting and loading tables of this shear are driven by a 25 horse-power electric motor. The rear shear table is 16 feet long and is provided with rollers at 12-inch centers so as to carry short lengths. The table is 46 inches wide between guides and is driven by a 30 horse-power motor. It is a tilting table with the fulcrum in the back. The front is raised or lowered by a hydraulic cylinder under the control of the shear operator. In its highest point the table is level, the elevation being the same as that of the front shear table, enabling the operator to shear the last piece of each billet to its greatest useful length, as it holds the bar in a level position while the knife descends on it. It is capable of making a longitudinal sliding motion, making possible an opening between the table and the ends of the shear knife, through which may be dropped scrap ends to the conveyor underneath. A disappearing idle roller is provided to fill the space between the loading table and the shear table when the latter is in its most forward position. This prevents short pieces from dropping down between tables.

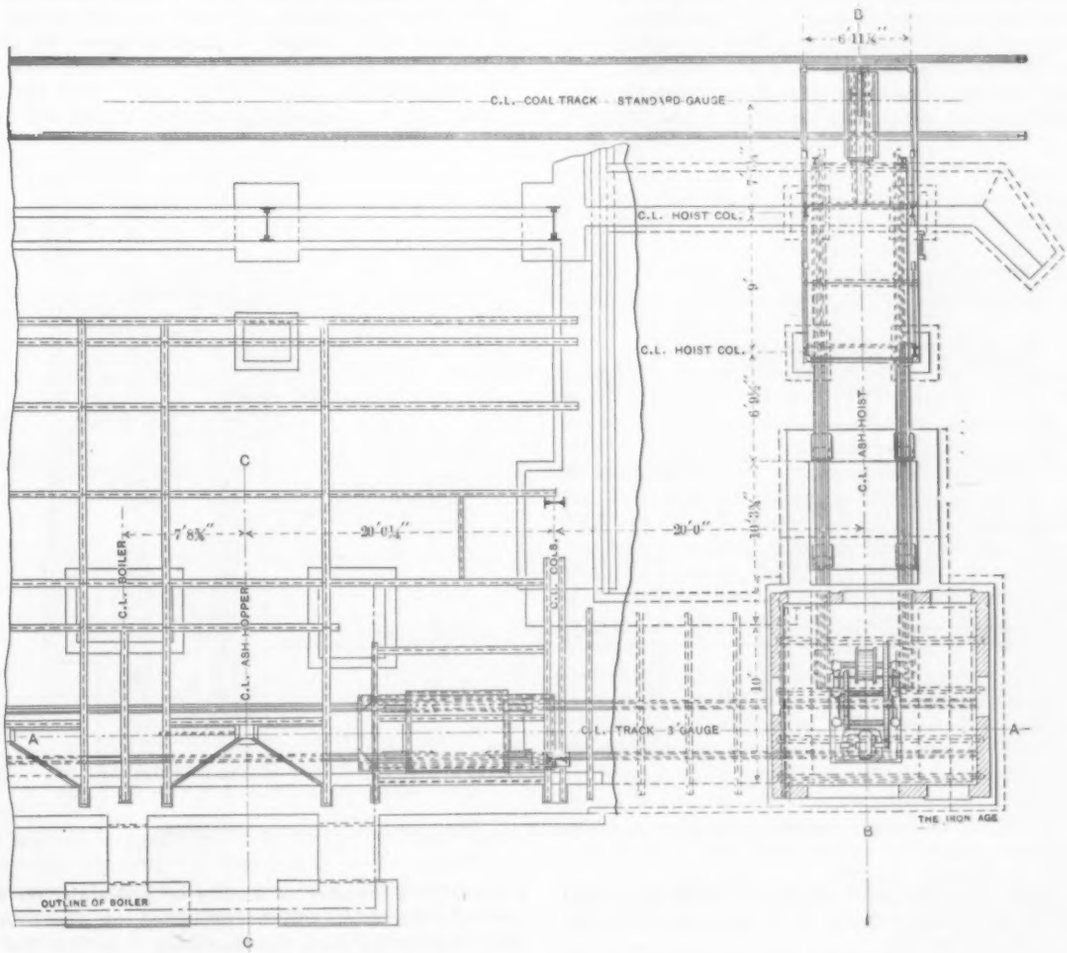


Fig. 14.—Plan of the Boiler House of the Illinois Steel Company's New Mills.

The loading table, which is a continuation of the rear shear table, is 19 feet long between roller centers, and like the shear table its rolls are 46 inches long between guides and are spread 12 inches apart. This table is driven by a 30 horse-power motor and has a steam pusher for skidding the product across the table and down an incline into cars. An adjustable and removable stop is provided behind the pusher so as to stop any pieces beyond the pusher that may have to be loaded on the cars. The motors driving the rear shear table and loading table and the hydraulic mechanism for controlling valves for the hydraulic car pushers are controlled by an operator on the elevated platform, where he has a clear view of the whole run. The same operator manipulates the removable stop at the far end of the loading table and the pusher for skidding the product off the table into cars as well as controlling the car pusher itself. Beyond the loading table is a 12-foot weighing table for weighing billets. This is electrically driven.

THE CRANES AND HOISTS.

The shearing end of the mill is spanned by a 30-ton 3-motor overhead electric traveling crane furnished by the Whiting Foundry Equipment Company. The span of this crane is 39 feet 6 inches, its lift 40 feet and it is fitted with Westinghouse motors and Electric Supply Company controllers. A Whiting 40-ton 4-motor electric traveling crane spans the blooming mill end of the building. This crane has a span of 75 feet 5 inches and a lift of 40 feet, and has besides its main 40-ton hoist an auxiliary 5-ton hoist. Outside of the building is a large billet storage yard served by a 10-ton half-gantry crane, also furnished by the Whiting Foundry Equipment Company. One end of this crane travels on a track at the ground level and the other end is supported on a runway on the side of the building 28 feet 7 inches above ground. Its span from centers of runway rails is 70 feet and length of travel 225 feet. The frame is open, and there is a cantilever extension on the bridge, permitting the trolley to travel 15 feet beyond the track. This crane is used for unloading hot billets to cooling beds and for loading materials on cars for shipment. The billet yard is 6 feet lower than the floor of the blooming mill building, this depression facilitating the handling of materials. Another Whiting crane spans the pump room. It is a 1-motor electric of 12 tons capacity, 53-foot span and 19-foot lift.

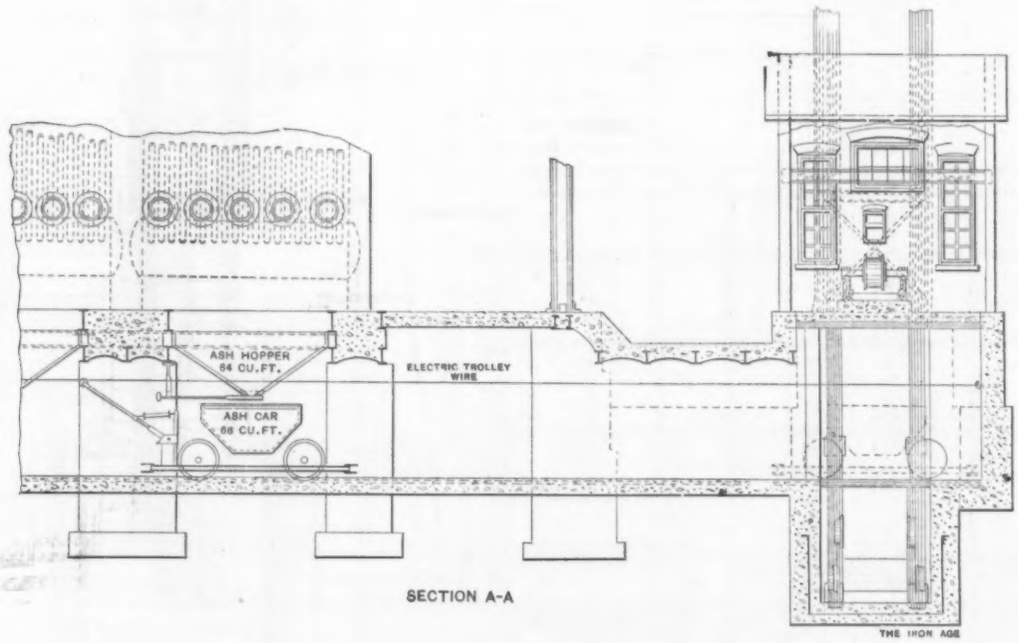


Fig. 15.—Cross Section of the Boiler House of the Illinois Steel Company's New Mills.

The Structural Mill.

The structural mill, as before stated, is a continuation of the blooming mill, the arrangements being shown in Fig. 13. It may be said to begin with the east wall of the reheating furnaces, which is 441 feet 7 inches north of the south wall of the soaking pit building. From this point to the northern end of the structural mill is approximately 470 feet. The width of the main building is 52 feet 8 inches, and the reheating furnaces occupy a lean-to 44 feet 6 inches wide and 206½ feet long, beyond which are two mill buildings, in which are located respectively the 32 and 28 inch mills. These buildings are each 76 feet wide, the 32-inch mill building being 76 x 190 feet and the 28-inch mill building 76 x 226 feet. The distance from the north end of the 28-inch mill to the northern wall of the building is 120 feet, and the width of this portion of the building is 72 feet.

The blooms intended for this mill after leaving the blooming shear are picked up by an overhead traveling charging machine, with revolving trolleys, and conveyed to the regenerative furnaces, of which there are three, whose hearths are 14 x 31 feet, each having six 3-foot charging doors. The heated billets are picked out of these furnaces by the same charging machine which deposited them there and are transferred to the roll tables of the structural mill. This mill is provided with two trains. The first is a 32-inch blooming or roughing mill furnished by the Mesta Machine Company complete with tables and manipulators, is of the 2-high reversing type and is driven by two Tod engines direct connected to the rolls, which are 78 inches long and 25 inches minimum diameter. The other is a 3-high 28-inch mill, with two 3-high stands and one 2-high finishing stand, having rolls 68 inches long. Provision is made in this latter mill for substituting a 27-inch universal mill for rolling flats and universal plates 6 to 18 inches wide up to 100 feet long in place of the 2-high finishing stand referred to, and the Tod reversing engine is built with that end in view. This mill was also built by the Mesta Machine Company after designs furnished by the Illinois Steel Company's engineers.

An interesting feature of the 28-inch mill is a modification of the plan which was installed by A. J. Moxham at the Johnson Works at Johnstown and later put in the Lorain Steel Company's plant by him. By consulting Fig. 9 it will be seen that there is a large unoccupied space beyond the engines of this mill. This space will be known as the roll changing room, and it will be provided with a number of stands or pedestals, on which duplicate housings will be deposited by the overhead crane and fitted with the necessary rolls for the next turn. When it is desired to change rolls the mill is disconnected from the engine by means of releasing links and the crane picks up the mill, housings and all, and carries it back to the roll changing room, returning with the duplicate housings already fitted with rolls. In this way a great deal of time is saved in making changes of rolls.

The roughed billets are conveyed from the roughing mill tables to two traveling lift tables transversing each side of the mill. These tables are 50 feet long, with rollers 12 inches in diameter, set at 30-inch centers. These tables are lifted by a bell crank arrangement and operated by a 75 horse-power Westinghouse motor. The transverse drive is operated by two 50 horse-power motors and one 50 horse-power motor for the roller drive. These tables have a roller speed of 320 feet per minute. The back table is driven by a 30 horse-power Westinghouse railroad motor connected series parallel for the transverse drive and one 30 horse-power motor for the roller drive. Steel chutes or inclined runways are provided as extensions of both runways, these chutes serving as supports or carriers for the ends of long pieces. By their use it will be possible to roll lengths over 200 feet.

After leaving the finishing mill the shapes are run on

roller tables to the hot saw, which cuts them to desired lengths or saws off imperfect ends. From the saw, which is 175 feet northwest of the rolls of the 20-inch mill, materials are conveyed by roller tables to either of two hot beds. These hot beds are provided with a series of endless chain conveyors located about 8 feet apart. The conveyors are fitted with spikes or pushers, which move the material a little beyond the center of the bed, when it is seized by another series of conveyors, which push it as much further along as is necessary. At the north end of the first bed, and between it and the next hot bed, is another hot saw, which is used for cutting to stock lengths before the material is conveyed to the straightener. The second hot bed will be spanned by a 100-foot crane, which will act in conjunction with cranes in the stock yard beyond.

The space for stock piles is not definitely fixed, but it will ultimately be at least 450 feet long by 180 feet wide, the longitudinal transfer of materials being accomplished by means of roller tables, while transverse

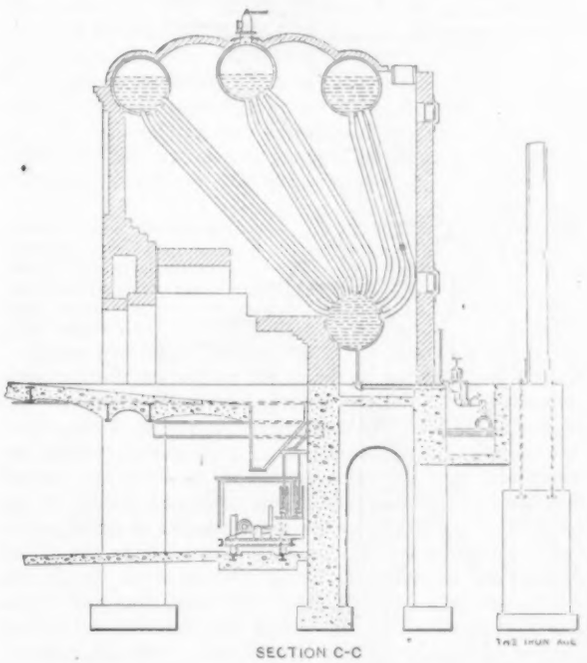


Fig. 16.—The Ash Handling Arrangement Under the Boilers in the Illinois Steel Company's New Mills.

transfers will be made by means of the overhead cranes. These stock piles will be arranged in series according to the lengths of materials being stored, the longer materials being given the shortest haul. The overhead cranes which will span the piles will be arranged so that they can pick up materials intended for shipment and lay them directly on cars without rehandling.

THE TOD ENGINES.

The engines applied to the 32-inch roughing train and to the 28-inch 3-high finishing train were built by the Wm. Tod Company, Youngstown, Ohio, in accordance with designs which, by conference with the engineers of the Illinois Steel Company, were esteemed most appropriate to the particular installation. These engines are in every detail duplicates and may be defined as twin tandem compound 4-cylinder direct connected reversing engines. The dimensions are: Stroke, 54 inches; high pressure diameter, 36 inches; low pressure diameter, 62 inches; maximum revolutions per minute, 150; maximum horse-power, 4500. The low pressure cylinders are attached to the engine frame. Intermediate and tail rod cross heads, with the front cross head, support the pistons free from the cylinders.

The control of the speed and power of the engine is secured by holding the links at such appropriate intermediate points as to favor an expansive use of steam. While the use of the cataract cylinder to move the links to the extremes of position is a common practice, it has been found practically impossible to hold the links at intermediate points—in other words, to shorten the cut off—owing to the stresses imposed by the lack of balance on the usual type of piston valves. Examination of the exhaust chamber pressures under the indicator has shown that high steam velocities in these cavities have frequently caused excessive unbalanced pressures along the valve stems. The Wm. Tod Company has provided for the ready equalization of pressures on the two sides of the piston valves by constructing the latter with large central communicating passages. Utilizing the advantage of this construction, it is proposed to use the links almost entirely as controlling agents, since a throttle valve is applied to the high pressure cylinders only. Even the throttle valve is operated by an individual cataract cylinder through the agency of a 4-inch shaft reaching from the pulpit. The leverman's duties are expected to be far less arduous with such mechanism for control than the usual construction compels.

It is a generally accepted view that it is nearly impossible to obtain any useful results in the application of a condenser to the ordinary two-cylinder reversing engine. Cushioning effect must be retained to meet the enormous inertia stresses of reciprocating parts. The abstraction of steam by a condenser compels such an addition of exhaust lap to the valves, with the incident of greater port resistance, to attain the necessary compression, that the useful effect of a condenser is practically nullified. With the tandem compound arrangement it is conceivable that sufficient compression for cushioning can be localized in the high pressure cylinders, thus making the use of a condenser on the low pressure cylinders permissible.

The Pump Room.

Adjoining the Mesta engines to the northwest is the pump house, 56 x 90 feet in floor dimensions. In it are installed two 3-cylinder compound fork-frame pumps, with Corliss steam valve gear, double acting outside packed water ends, furnished by the Laidlaw-Dunn-Gordon Company, Cincinnati, Ohio. These pumps are 22 x 32 x 5¼ x 30 inches. They are fitted throughout with Corliss valve motion. Each pump has one 22-inch high pressure cylinder, with two 34-inch low pressure cylinders, one on either side, all three cylinders being bolted directly to the frame. The piston rod is 5¼ inches diameter and the stroke 30 inches. The double acting pump ends are connected to the steam cylinders by heavy cast iron housings, the rods between the steam and pump cylinders being joined by heavy screwed couplings. Two fly wheels are provided, these being mounted between the frames. A deep cast iron bed plate is extended under the entire length of each subunit. This bed plate forms the lower member of a truss, of which the upper member is composed of the frame, cylinder, housing and pump end, resulting in exceptional stiffness throughout the length of the machine, the rigidity thus obtained being, in fact, much greater on account of the truss construction than if a deeper bed plate and stiffer rods were used for joining the parts together.

The 3-cylinder arrangement is followed for two reasons: In the first place, this construction will allow a far higher ratio of cylinders and a consequently later cut off in the high pressure cylinder, without uneven distribution of frame loads, than is the case with a cross compound machine. The advantage of a late cut off in the high pressure cylinders exists in this case because of the occasional necessity for the machine to be self starting, in which case the late high pressure cut off, with cranks at 120 degrees apart, is of material assistance in getting the machine quickly under way. In the second place, the 3-cylinder arrangement of the engine permits a triplex pump end, giving a much greater uniformity of flow than is obtainable in a duplex double acting pump end. For high pressures an approximately uniform rate of flow during the entire revolution is exceptionally important, since air cushions in the line are not practicable, and since fluctuations in the rate of flow are as a result felt through the entire system. It is for this reason that a triplex pump end will give much better high pressure results than a duplex machine.

Among the other unusual features of construction are the crank shafts, which are built in accordance with marine

practice, each crank shaft being machined up complete from a single forging, avoiding the joints which are a weak feature of a built up shaft. The frames are of the double bearing type, the bearings being provided with quarter boxes fitted for wedge and screw take up. The cross heads are of cast steel of the box type, working in bored guides and provided top and bottom with large Babbitted slippers. The Corliss steam valve gear is fitted with dash pot release and hand adjustable cut off on the high pressure cylinder, while the low pressure gear is of the fixed cut off type without release.

Each of these machines has a capacity at 50 revolutions per minute of 825 gallons per minute, against 750 pounds discharge pressure, with 120 to 135 pounds steam pressure at the throttle, the steam consumption under these conditions being about 18 pounds per horse-power per hour, or considerably less than half of that obtainable from duplex compound machines of similar capacity.

The Power House.

Adjoining the structural mill to the northeast is the boiler house, shown in plan in Fig. 14 and in section in Fig. 15, 462 feet 6 inches long, 56 feet 6 inches wide, with a 10-foot lean-to, in which are installed 24 type G Stirling water tube boilers of about 400 horse-power each, based on the assumption, general among water tube boiler makers, of 1 horse-power to each 10 square feet of heating surface. These boilers are built in 12 batteries of two each and are provided with Playford chain grate stokers. Each battery is served with a steel stack 6 feet inside diameter and 150 feet above grates. Each boiler is connected with the steam main by means of a horseshoe outlet 7 inches in diameter, the shape of the outlet compensating for expansion and contraction. These boilers have each 248 4-inch tubes connecting the lower header with three overhead headers. No forced or induced draft is provided, as natural draft with a 150-foot stack is deemed sufficient for the purposes of the plant.

THE COAL AND ASH HANDLING APPARATUS.

The most interesting feature of this boiler plant is its mechanism for handling coal and ashes. The coal is brought in on standard gauge railroad tracks on the ground level in hopper cars, the cars being dumped through a grating in coal storage bins. At the lower end of each bin is a hopper controlled by a valve which is opened or closed electrically by the operator of a crane which travels the length of the building. This traveling crane is provided with a boot at the lower end of a steel leg elevator 36 feet high and 2 feet 9⅝ inches diameter. When the opening of the boot on the traveling crane is opposite the hopper of the coal bin the crane operator pushes a lever, which opens the valve and permits the contents of the bin to flow into the boot. At the same time a bucket elevator is set in motion, which lifts the coal to the top of the crane and across a horizontal leg, from which it drops into a large coal storage hopper on the boiler side of the crane. When this hopper is full the valve at the bin is closed and the crane is conveyed to one furnace after another, the operator opening the valve of the hopper at the lower point of the crane storage bin, permitting the coal to flow by gravity into the feed hopper of the mechanical stoker. In this way one crane operator can keep supplied with fuel the whole 24 boilers.

THE ASH HANDLING MECHANISM.

The ash handling mechanism is illustrated in section in Figs. 16 and 17. The rear portion of the floor of the furnaces of each boiler is provided with an ash hopper, the floor tilting backward at an angle of about 5 degrees toward the hopper. The ashes are in great part automatically deposited in this hopper by the action of the chain grate stoker, but such as fall on the furnace floor in front of the hopper are easily pushed back to the hopper by the attendant. The hopper is provided with a valve which permits the egress of ashes when desired, and is closed to the ingress of air, except when ashes are being dumped. The contents of the hopper fall into a steel ash car electrically propelled. This car, which has a capacity of 68 cubic feet, travels on a track under the boiler in line with the boiler fronts to the ash elevator at the south end of the building, where it is dumped into a steel skip car stationed in a pit at the foot of a 45-degree incline. When the skip car is full it is hoisted to the top of the incline by means of a ¾-inch wire rope actuated by a 10 horse-power motor, which carries the car to a point at the top of the incline, where it is automatically

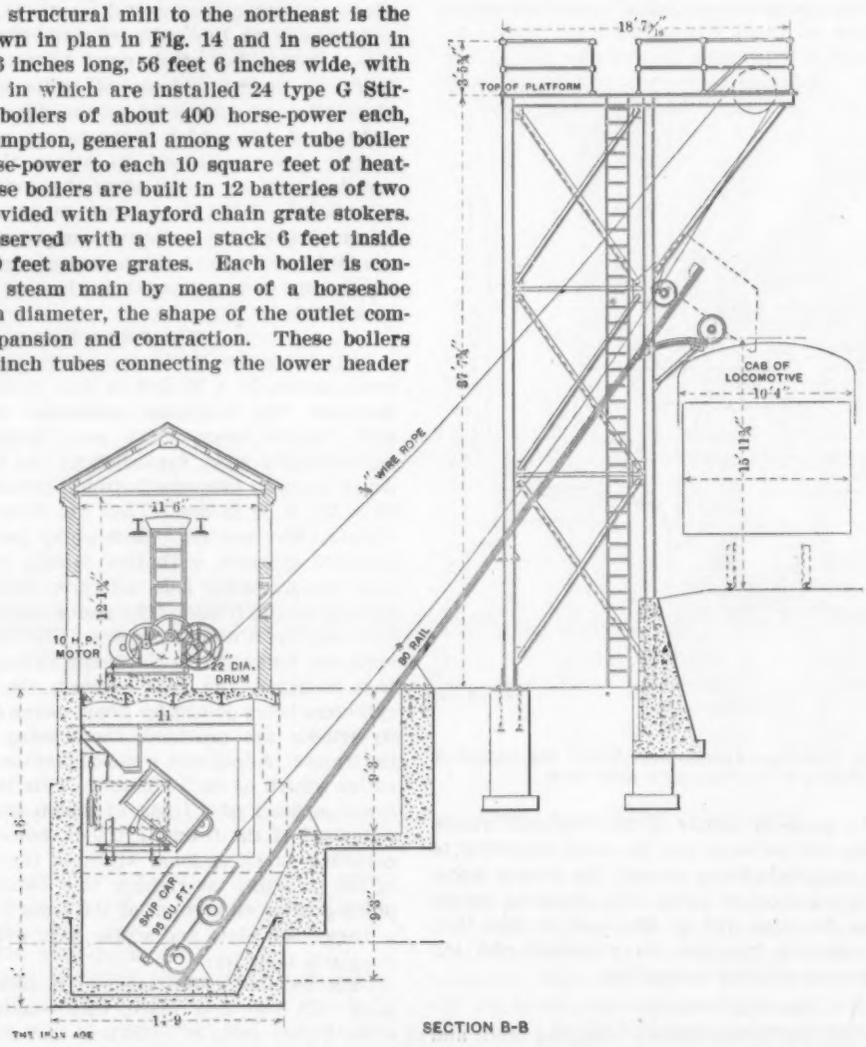


Fig. 17.—Method of Handling Ashes to Cars in the Boiler House of the Illinois Steel Company's New Mills.

dumped into freight cars on standard gauge tracks outside the building.

The Refractory Plant.

On the north dock of the slip shown on the general ground plan of the works is to be erected a refractory plant. This will contain an equipment of wet and dry grinding apparatus furnished by Thomas Carlin & Sons, Allegheny, Pa., as well as three calcining cupolas designed and built by the Illinois Steel Company. It will have a daily capacity of 30 tons of crushed dolomite and other materials and will be utilized for both the new and the old open hearth plants.

The South Works as a Whole.

The South Works of the Illinois Steel Company comprise at the present time, not including the additions just described, 10 blast furnace stacks, with an annual capacity of 1,200,000 gross tons of Bessemer pig iron; three 15-ton Bessemer converters, capable of producing 880,000 tons of steel ingots annually; 10 basic open hearth furnaces built in 1895, producing 240,000 tons annually; one 3-high blooming mill and one 3-high finishing train with four stands of rolls, which together have an annual capacity of rolling 720,000 tons of rails; one plate mill with two stands of rolls, 34 x 90 and 34 x 132 inches, producing annually 120,000 tons of plates; one slabbing mill, with an annual capacity of 240,000 tons of blooms, slabs and billets. Adding the capacity of the new mills described in this article, the annual capacity of the mills at South Chicago may be fairly estimated as follows:

	Gross tons.
Bessemer steel ingots	880,000
Bessemer steel rails	720,000
Open hearth steel ingots	500,000
Open hearth slabs, blooms and billets	450,000
Open hearth steel plates	120,000
Open hearth steel structural shapes	150 000

These are large figures, but there is still a great expanse of land owned by the company on which additional mills can be erected advantageously, and the phenomenal development of Western markets will doubtless lead to the further enlargement of the works in the near future. In fact, the plans of the company already include a number of further additions and enlargements. The location of the plant is an admirable one in every way. It is on the shores of Lake Michigan and of the navigable Calumet River. It is directly served by many of the leading trunk line railroads that enter Chicago and has direct connection through the Belt Line with all other roads entering the city. Its Chicago location gives it a nearby market for all its products.

The turnings from high speed steel were produced so quickly by a high speed 30-inch lathe made by Hulse & Co., Manchester, England, that the work of two men was required to keep this single tool clear of chips. The tools cut about 150 pounds of metal per minute, a quantity which would seem to make necessary the use of some sort of mechanical conveyor for the purpose indicated. It has been suggested that the conveyor be placed in a trench underneath the floor, and then the chips, having reached it by gravitation, could be removed as fast as they were formed without in any way interfering with the operation of the machine and without crowding the floor with carts and men engaged in their removal.

Water in contact with a mass of finely powdered uranium minerals, such as uranophane, while it does not dissolve any appreciable amount of radium as such, has imparted to it sufficient radium emanation to produce a very marked radioactivity. It is stated that it may acquire this radioactivity by simple contact wtih gases containing it. Experiment has shown that an extremely minute trace of uranium minerals in the rocks and soils through which water percolates would be quite sufficient to impart to it a measurable quantity of radioactivity. As neither hot nor cold water will dissolve radium, such waters as those at Bath and Baden Baden, which contain true dissolved radium, must obtain it by some peculiar decomposition taking place at great depths under the combined influence of great heat and an enormous pressure.

The Dodd Engine.

A reciprocating engine for steam or compressed air of extremely novel design, since it has no slide valve or other valves, is illustrated herewith, being the invention of John Dodd of Seattle, Wash. Steam enters the cylinder directly, passing through the piston to each end alternately, the inlet and outlet being controlled by a slight rotary movement of the piston. By doing away with the steam chest, slide valve, spindle link and eccentrics the cost of construction is reduced from 30 to 50 per cent. It can be run, the inventor states, almost without cylinder oil, reduces condensation, uses steam more effectively, as it goes directly into the cylinder, and does away with the friction caused by the slide valve, eccentrics, link, &c., thereby giving increased power. With this type of engine any number of cylinders and cranks can be used, either high pressure or condensing.

Fig. 1 of the accompanying engravings is a side elevation and Fig. 2 a front elevation. A is the cylinder, which is of ordinary construction; C is the inlet pipe and D the exhaust. B, the piston, is longer than ordinary, and

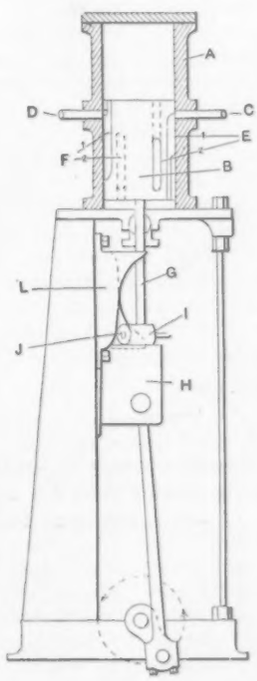


Fig. 1.—Side Elevation.

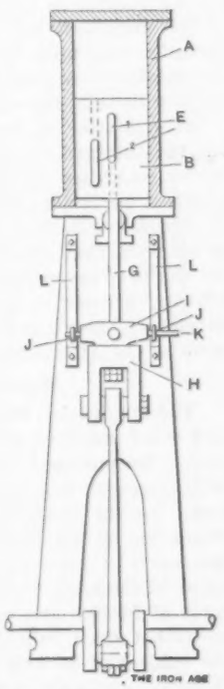


Fig. 2.—Front Elevation.

THE DODD ENGINE.

has cut into its surface two inlet ports, E, and two exhaust ports, F, one inlet and one exhaust port serving each end of the cylinder. G, the piston rod, has the double cross arm I pinned rigidly to it just above the cross head H, and antifriction rollers are pivoted on each end of the cross arm. The piston rod moves freely in the cross head. Steam enters at C, passes down E 1 into the bottom of the cylinder, causing the piston to rise. In doing so the antifriction roller J travels upon the incline plane L, which causes the piston to turn on its own axis, closing the port E 1, and bringing the port E 2 in alignment with the steam pipe C. When the piston is at the bottom the exhaust port F 1 is in alignment with D, allowing the steam to pass out from the upper end, and when the piston rises to the upper end of the cylinder the exhaust port F 2 is in alignment with D. If the engine should be stopped on center it may be started in either direction by turning it over in the direction desired from either dead center.

The inventor claims to have demonstrated the practical utility of the engine by building one which develops enormous speed and power. All parts are very accessible for repairs, making it an engine which it is believed will be very desirable for driving launches, blowers, dynamos, centrifugal pumps, &c., or wherever a cheap and efficient power is desired.

The Status of the Drawback Law.

WASHINGTON, D. C., February 23, 1905.—Widespread misapprehension appears to exist with regard to the force and effect of the recent drawback decision of the Secretary of the Treasury, based upon an elaborate opinion of Attorney-General Moody. The situation has also been somewhat clouded by the debate in the Senate during the past week upon several proposed amendments to the drawback law, which, if adopted, would have accomplished its practical repeal so far as the industries engaged in the production of iron and steel, lead, paints and numerous other articles are concerned.

Erroneous Reports Current.

Sweeping assertions have been made in prominent and usually well informed newspapers to the effect that the Attorney-General's decision liberalizes the drawback law materially and furnishes manufacturers of iron and steel, lead, leather, woolen goods, &c., with practically free raw material for their export business. This information has naturally aroused much interest among manufacturers, many of whom have applied to the Treasury Department for copies of the Attorney-General's opinion and for statements as to the particulars in which the scope of the drawback law has been broadened by the interpretation put upon it. To all such inquirers copies of the opinion have been forwarded, accompanied, however, by very little in the way of explanation.

As a matter of fact, the Attorney-General's opinion has not enlarged the scope of the drawback law, as heretofore construed by the Treasury Department, in the slightest particular, nor will it be possible hereafter for drawback regulations to be obtained on a basis differing at all from that which has prevailed in the Department for the past seven years. The misleading reports to the contrary are due to ignorance of the conditions that have heretofore existed and to the scope of the questions ruled upon by the Attorney-General in his recent opinion.

Question Ruled Upon.

The application upon which the Attorney-General has just ruled was that of certain flour millers of the Northwest, who proposed to employ Canadian wheat, together with domestic wheat, in the production of flour for export. In the ordinary routine of the Department this regulation would have been issued without question in the course of a few days, after the inspection by a special agent of the mills owned by the applicants. Similar mixtures of foreign and domestic materials have been freely permitted since July, 1898, when the question was made the subject of an exhaustive opinion drawn by Solicitor-General Richards and approved by Attorney-General Griggs. This opinion overruled a prior decision rendered by Attorney-General Olney, under date of December 28, 1894, in a case covering the right to drawback upon lead produced from mixed Mexican and domestic ores.

Both decisions hinge upon the proviso to section 30 of the tariff act requiring that the imported materials "shall so appear in the completed articles that the quantity or measure thereof may be ascertained." Mr. Olney held that the appearance referred to must be physical and that unless the foreign and domestic materials in the finished product could be distinguished by mechanical separation or chemical analysis no drawback could be paid. Solicitor-General Richards reversed this ruling squarely and emphatically. He said: "What material is domestic and what imported can only appear or be shown to the customs officers by a reference to the records, or by an inspection of the process of manufacture. . . . The imported materials used in manufacturing articles must be identified by intrinsic evidence. After the imported materials have been identified, then the proviso simply requires that such imported materials or measure thereof can be ascertained. The nature of the appearance, the sufficiency of the proof to be presented in order to comply with the requirements of the proviso, is, of course, for the customs officers to determine."

Effect of Richards Opinion.

Under this opinion the Treasury Department allowed drawback of duty on exports of pig lead produced in part from imported lead ores, and afterward applied the same principle to exports of pig iron and other forms of iron and steel, lubricating oils, compound lard and numerous other commodities in which the foreign material was capable of identification only through the books of record of the manufacturers. This ruling was in full force in the Treasury Department when the application of the flour millers for a regulation for the exportation of flour made from blended Canadian and domestic wheat was filed.

Certain wheat growers in the Northwest, believing that if the millers could not obtain imported wheat to blend with the domestic article they would be obliged to purchase domestic wheat only at a price materially augmented by the duty of 25 cents per bushel, succeeded in interesting Senator Hansbrough in the matter and induced him to file a protest with the Secretary of the Treasury. Under ordinary circumstances such a protest against a practice in force for more than six years would have received scant consideration, but for reasons which may have been more or less intimately related to politics the Secretary of the Treasury decided to refer again to the Attorney-General the question of the Department's right to grant drawbacks in cases where the identification of the imported material must be accomplished by books of record rather than by mechanical separation or chemical analysis. After considering the subject for nearly two months, during which hearings were given and voluminous briefs filed on both sides of the question, Attorney-General Moody forwarded to the Secretary of the Treasury an opinion sustaining at all points the ruling of Solicitor-General Richards. It concludes:

> In my opinion, where it is proposed to export a product manufactured in the United States from a combination of domestic material and foreign material which has paid duty, and the customs officials can identify the foreign material and can ascertain to their satisfaction, by the evidence of books of account or otherwise, the quantity or measure of the foreign material actually present in the completed article, the exporter is entitled to receive a drawback of 99 per cent. of the duties paid upon the imported material thus ascertained to be actually present in the completed article.

No Change in Construction.

Upon receipt of this opinion the Secretary of the Treasury issued the regulation desired by the millers, and flour is now being manufactured for export thereunder. The publication of these regulations has been made the text for numerous articles in the editorial and news columns of the daily press, in which manufacturers have been told that the law has just been construed in such a manner as to permit drawbacks to be paid under conditions heretofore prohibited. There is not the slightest foundation for these statements. The law as laid down by Attorney-General Moody is the law as construed by Solicitor-General Richards. Not the slightest change has been made in the practice of the Treasury Department and not a manufacturer in the country will, hereafter be granted a drawback regulation under existing law that would not have been granted before Attorney-General Moody's opinion was rendered. The publication of misleading statements with regard to the interpretation now put upon the drawback law has been greatly encouraged by certain parties who are offering their services to manufacturers to secure regulations which, it is said, have not heretofore been obtainable, but it should be thoroughly understood that while imported materials may be identified by books of record this is not a new departure, but, as already stated, has been the rule for more than six years past.

Failing in an effort to prevent the allowance of drawback on flour made from blended wheat, Senator Hansbrough during the past week offered an amendment to the agricultural bill in the Senate providing that the drawback law should not apply to the duty on wheat, and this was adopted. Senator Patterson of Colorado moved a more radical amendment, the effect of which would be to deny drawback in all cases where identification could not be had through mechanical separation or analysis, but this was defeated after a spirited debate, in which the so-called Lead Trust was vigorously assailed by Senators Patterson, Heyburn and others. Subsequently, the House adopted a resolution requesting the Senate to withdraw the Hansbrough amendment on the ground

that it embodied a change in the revenue laws, which, under the Constitution, the House of Representatives only is empowered to initiate. The Senate finally acceded to this request. It therefore appears that neither the review of the law by the Attorney-General nor the efforts made for its amendment in the Senate has modified the statute or changed the construction put upon it in the slightest particular. W. L. C.

The Simplon Tunnel Through the Alps.—The piercing of the Simplon tunnel through the Alps was completed on February 24. The length of the tunnel, from Briga in Switzerland to Iselle on the Italian side of the mountain, is 12.5 miles. Work was begun November 13, 1898, and was prosecuted under very great obstacles, among which the most formidable was the tapping of powerful cold and hot springs. The construction company has contracted to have the tunnel ready for traffic on May 15. As soon as the boring is thoroughly completed and the track laid a smaller tunnel is to be constructed parallel to the large one, which will be increased in size so as to permit of traffic both ways at the same time. In the meantime a switching station is to be constructed about half way inside the large tunnel so as to allow for the passing of trains. This is the third tunnel through the Alps, the others being the St. Gothard, 9.25 miles long, and the Mont Cenis, 7.6 miles long. The cost of the Simplon tunnel is $15,000,000, borne jointly by the Italian and Swiss Governments.

England is suffering from drought. Its rivers were never lower than now.

The Bullard 36-Inch Vertical Turret Lathe.

A 36-inch boring mill of special design having a vertical side rail as well as a horizontal cross rail for the support of tool heads is shown in the accompanying illustrations. It is a new product of the Bullard Machine Tool Company, Bridgeport, Conn., and has been given the distinguishing name of a rapid production vertical turret lathe. The analogy between this machine and a lathe is strikingly brought out in Fig. 3, which shows a top view of the machine that in many respects resembles a horizontal turret lathe. The side head gives to the tool a lathe characteristic which hitherto has not been found in a boring mill and increases its capabilities. Fig. 1 shows a front view of the machine and Fig. 2 a rear view in which the driving and feeding arrangements may be seen.

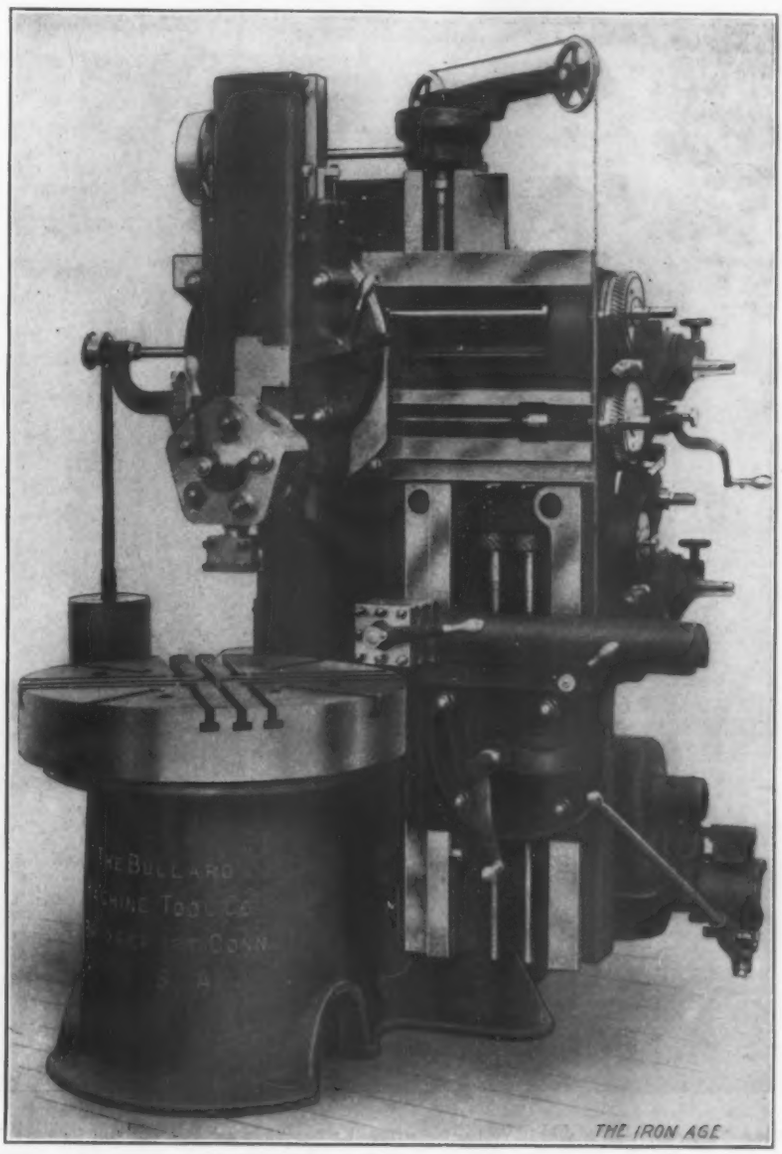


Fig. 1.—Front View or Working Side of the Bullard 36-Inch Vertical Turret Lathe.

The two heads are entirely independent in their feed movements, and both have vertical and cross feeds. The heads are also independently counterbalanced. One of the most important features of the machine is the possibility of using both of the heads simultaneously without their interfering on work of small diameters. Another advantage is that no long boring bars or extended tool holders need ever be used in the vertical turret, the side head turret being available for operations which would ordinary require such an equipment. The side head carries a four-face turret and may be swiveled for angular facing to 45 degrees on either side of the horizontal. The head has a vertical movement of 28 inches and a horizontal and angular movement of 15 inches. A threading attachment may be applied to this head if desired, without special fitting.

The machine is driven from a constant speed pulley

and has 15 possible speed changes, obtained through a cone of gears and a diving key in a gear box at the rear of the machine, on the opposite side from the driving pulley. It is manipulated by a lever at the front within easy reach of the operator, as are also the other controlling levers of the tool, a fact which is well brought out in Fig. 1. The table is 34 inches in diameter and is driven by an internal spur gear of a diameter nearly that of the table. The table speeds range in geometrical progression, the maximum surface speed being 21 feet per minute at 2 inches diameter, and the minimum speed 27 feet per minute at 36 inches diameter. The driving pulley may be run continuously, as it is possible to stop the table at any intermediate point between each speed, when the direct acting brake may be applied by lifting the speed lever.

The feed changes are also obtained from gear boxes in a similar manner to the table speed changes. Changes are made by small hand wheels, which may be seen in Fig. 2, the feed per revolution being indicated on a direct reading index plate on the feed box. Each head has its own feed box, and in each eight changes are obtainable for either the horizontal or vertical direction. The range of feeds is from 1-96 to ½ inch per revolution. Pull gears on feed rods have been eliminated, worm gears keyed to the rods being used instead. The horizontal or vertical trains of feeding mechanism for the head on the cross rail are thrown in and out by a drop worm, which may be caused to engage with one or the other of the worm wheels on the horizontal and vertical movements respectively, or midway between released from both. The worm is manipulated by a lever extending to the front of the feeding mechanism. When the worm for feeding the side head is engaged with the worm wheel on the feed shaft, the latter may be engaged through spiral gears and a clutch with either the screw for vertical travel of the carriage or a splined vertical shaft for the horizontal travel. With the worm in its dropped position the feeds are thrown out. Each speed has a micrometer index. Safety points are provided for in the feeds so that carelessly permitting the heads to run together results in no damage or delay. This device in no way weakens the feeds, and is not in use when the threading attachment is engaged.

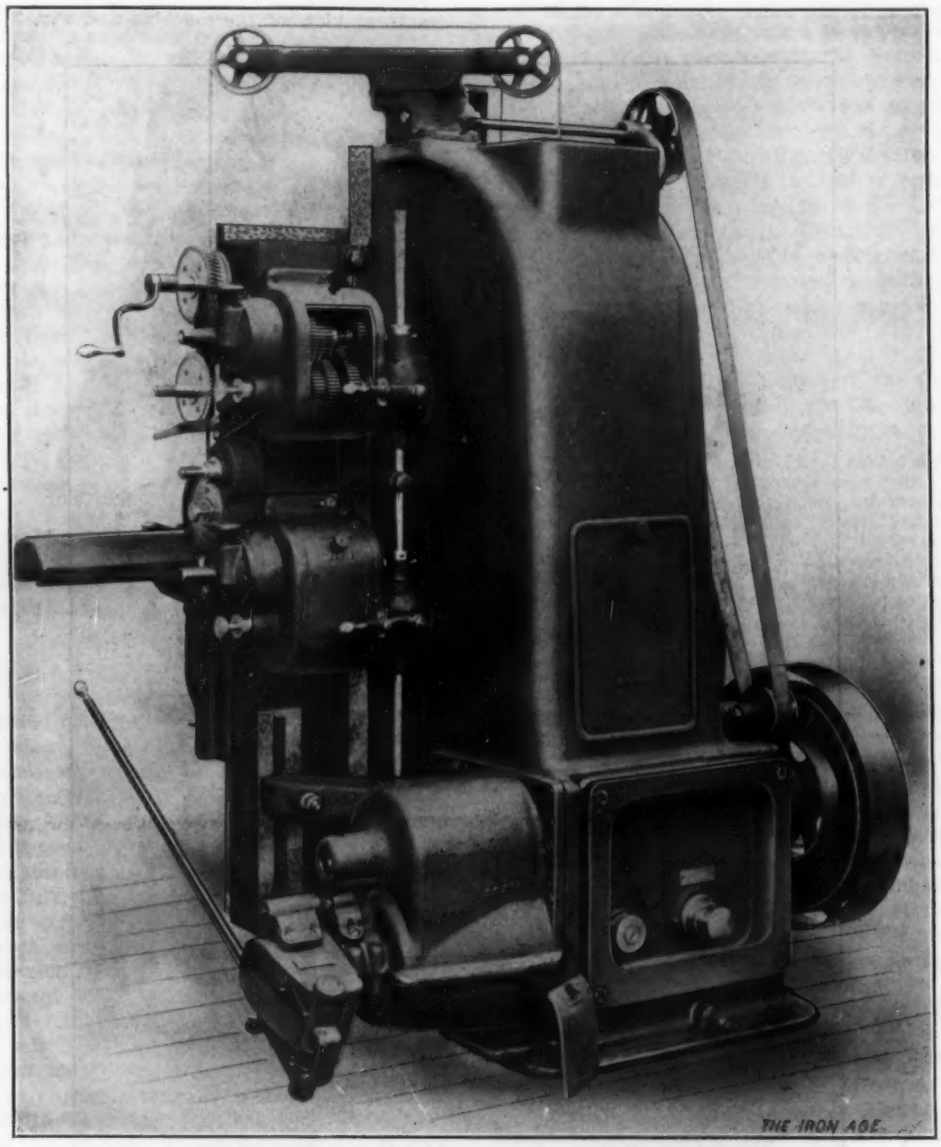


Fig. 2.—Rear View of the Bullard Vertical Turret Lathe, Showing Driving and Feeding Mechanisms.

The vertical head mechanism is the same as in the recent boring mills of the Bullard make. It carries a five-face turret, will face a diameter of 36 inches and has a vertical and angular movement of 26 inches. The cross and side rails are connected together, forming a unit which has a vertical movement by power of 12 inches. The saddles have the narrow guide bearings of the Bullard mills, the ratio of length to width being great, preventing tilting and binding of the heads.

The lubricating system is thorough, all high speed shafts being bronze bushed and self oiling. The trains of gears in the drive and feed boxes are immersed in oil, as is also the table spindle, sight cups being placed so that the oil level may be constantly maintained. The weight of the machine is 9300 pounds, and the floor space occupied 65 x 70 inches. The illustrations show the belt

driven form, but it may be equipped with a 7½ horsepower motor mounted on a bracket at the rear, the speed of the motor not to exceed 1200 revolutions per minute.

The following are the advantages claimed for a vertical turret lathe over one of horizontal construction: The handling of heavy face plate work of all descriptions is facilitated, as the vertical construction permits of a very rigid frame or bed; larger spindle sizes and greater power, while the added weight of the work resting directly on the spindle thrust bearing tends to preserve rather than to destroy the alignment. There is also freedom from chattering and vibrating, rendering possible rapid work of good quality, which would not be possible in a horizontal machine, on account of its heavy overhanging parts. It is also more easy to set the work in a vertical lathe, and it may be accomplished in a shorter time. In a horizontal turret machine there are usually combined a turret slide having only a longitudinal movement and an ordinary lathe carriage. The latter in many instances interferes with the proper operation of the turret, making it necessary to use long unsupported boring bars and extended tool holders. The turret having no cross movement is limited in its useful operations, often requiring expensive special tools. Taper boring, except with special equipment, is practically impossible in a horizontal turret lathe, whereas in a vertical machine the swiveling of the vertical head to any angle up to 45 degrees on either side of the vertical and the possibility of cross adjustment makes it easy to perform operations of taper boring and turning.

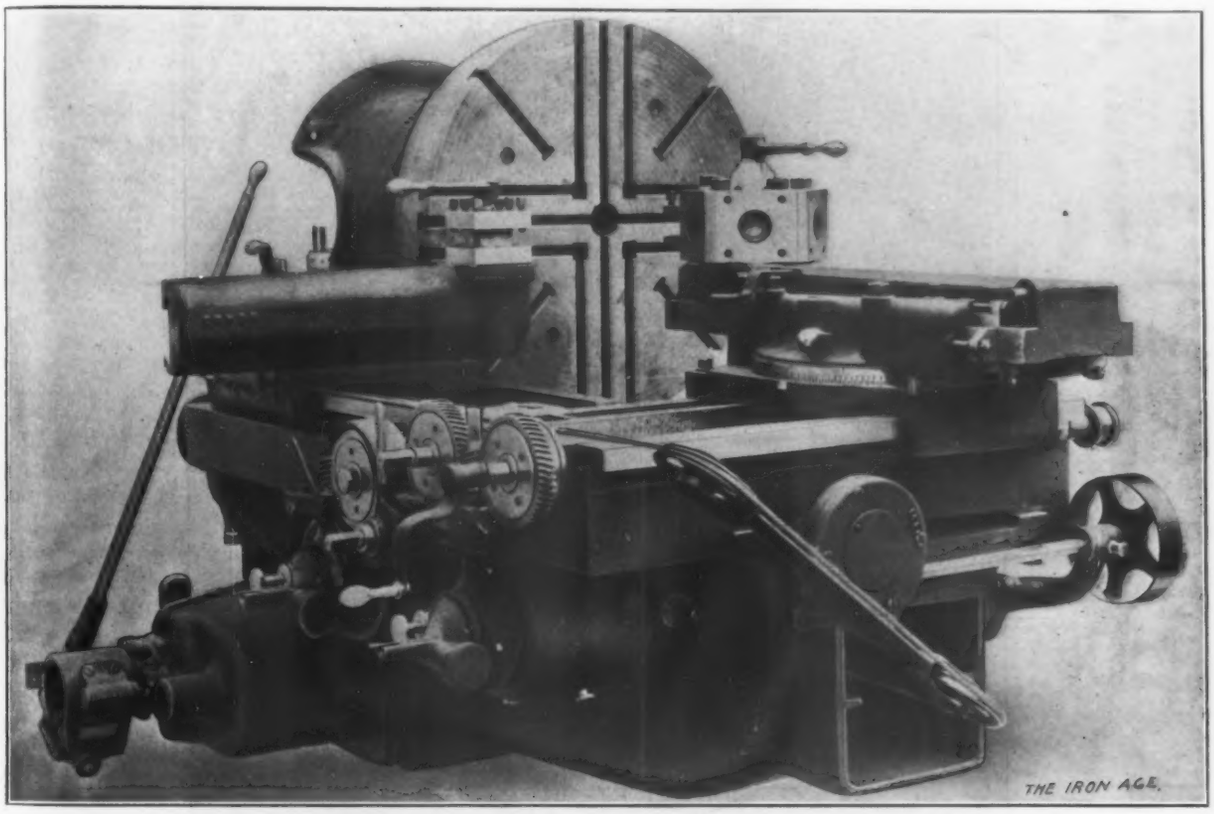


Fig. 3.—View Looking Down on the Bullard Vertical Lathe, Emphasizing Its Resemblance to a Horizontal Turret Lathe.

Pacific Coast Trade.

SAN FRANCISCO, CAL., February 21, 1905.—The wet weather of the past two weeks has interfered considerably with business, owing to the difficulty of transportation. The mountain counties and the upper coast counties have been especially affected by the bad weather. Even the sugar and white pine mills that usually run through the winter have been closed owing to the impossibility of getting logs from the woods. But all this has a reverse side. The rains have facilitated the labors of the husbandman and the orchardist throughout the entire State and even southern California has an unusual record in the matter of precipitation. As a result of the rains the work at the mines is and will be active, and mining machinery, tools, &c., will be in great demand.

A great trade is looked for from the Hawaiian Islands, which will this year ship sugar and other products to the value of $40,000,000, and exports will be at least half of that amount, principally from California. A good deal of machinery for the sugar mills and pipe for irrigation will be wanted there.

The people are agitated by the rumors afloat regarding the Western Pacific, now saying the road is going through and again that it is not. The preponderance of evidence is, however, in favor of its going through, as quite a large amount of money has been spent already in preliminaries, such as surveying, &c. This road has been promised to us for a couple of years, but very little progress has been made in that time. No doubt it will come eventually, and our people must simply possess their souls in patience.

The exports of machinery, steel bars, &c., to the Orient, which had eased off for a while, have begun again in strong force. The Korea, which left here a few days ago, took out goods of these descriptions valued at $267,316. Of this, cotton mill machinery formed the principal part. As there have been heavy shipments of raw cotton on the last three steamers, it looks as if the Japanese were about to extend their cotton industry considerably. It may, however, be just one of the results of the war, and be simply providing for the future wants of the army in Manchuria. Bicycles, which have not been touched for some time, were represented on this steamer, being shipped to the amount of $5521. The shipments of leather for the army reached 638,161 pounds. They seem to be increasing in quantity and value. Larger shipments of machinery are going to Mexico and Central America—mostly mining machinery. There have been moderate exports of machinery and heavy ones of pipe to the Hawaiian Islands during the past fortnight. Those of hardware have been numerous, but the aggregate amounts to nothing large. J. O. L.

The American Screw Company's Annual Meeting.

The annual meeting of the stockholders of the American Screw Company was held February 14 at the office of the company, Providence, R. I. The annual reports of the president and the Board of Directors were presented by President Samuel M. Nicholson, and the annual financial report by Treasurer George W. Thurston. The reports were said to be very satisfactory and the meeting a harmonious one. The following directors were re-elected for the ensuing year: Charles B. Humphrey, Charles Alexander, George H. Robinson, George L. Shepley, Samuel M. Nicholson, Marsden J. Perry and Arthur H. Watson. A meeting of the directors immediately followed the stockholders' meeting, when the following officers were chosen: President, Samuel M. Nicholson; vice-president, Marsden J. Perry; treasurer, George W. Thurston; secretary, William A. Cranston; general superintendent, Benjamin Thurston; agent, James A. Nealy.

It had been rumored in business circles that the Nicholson File Company and the American Screw Company were to consolidate. The recent application of the Nicholson File Company to the Legislature for permission to increase its capital stock to $10,000,000 led many to think that the rumors were well founded. The rumor of consolidation was brought up by one of the stockholders of the screw company at the meeting, and President Nicholson made a positive denial of its truth. The file company's application for permission to increase its capital stock was to enable it to carry out plans that have been maturing for some time, but are of a different nature than an acquirement of the American Screw Company's property.

The annual general meeting of the Iron and Steel Institute will be held at the Institution of Civil Engineers, London, on Thursday and Friday, May 11 and 12, 1905. The annual dinner will be held, under the presidency of R. A. Hadfield, in the Grand Hall of the Hotel Cecil on Friday, May 12. The autumn meeting, as previously published, will be held at Sheffield on September 25 to 29, 1905.

The Bath Grinder.

A new universal grinder of unusual versatility has lately been brought out by the Bath Grinder Company, Fitchburg, Mass. The accompanying illustrations serve to show the general appearance and construction of the grinder, but show only a very few of its possible operations. Referring to Figs. 1 and 2 it will be seen that the grinder is supported by a cylindrical column with a square flanged base plate. The upright supporting the grinding spindle is very rigidly secured to the base by a wide circular flange, giving unusual stiffness, greatly to be desired for the sake of accuracy in grinding. The flange of the upright frame is the central one of the three shown in the figures and is graduated in degrees. The work supporting slides are mounted on a base casting which has a circular flange at the bottom resting upon the flange of the upright frame. It is free to turn except when clamped by the binding handles shown in Fig. 2, making it possible to swing the longitudinal slide to any horizontal angle with respect to the grinding wheels.

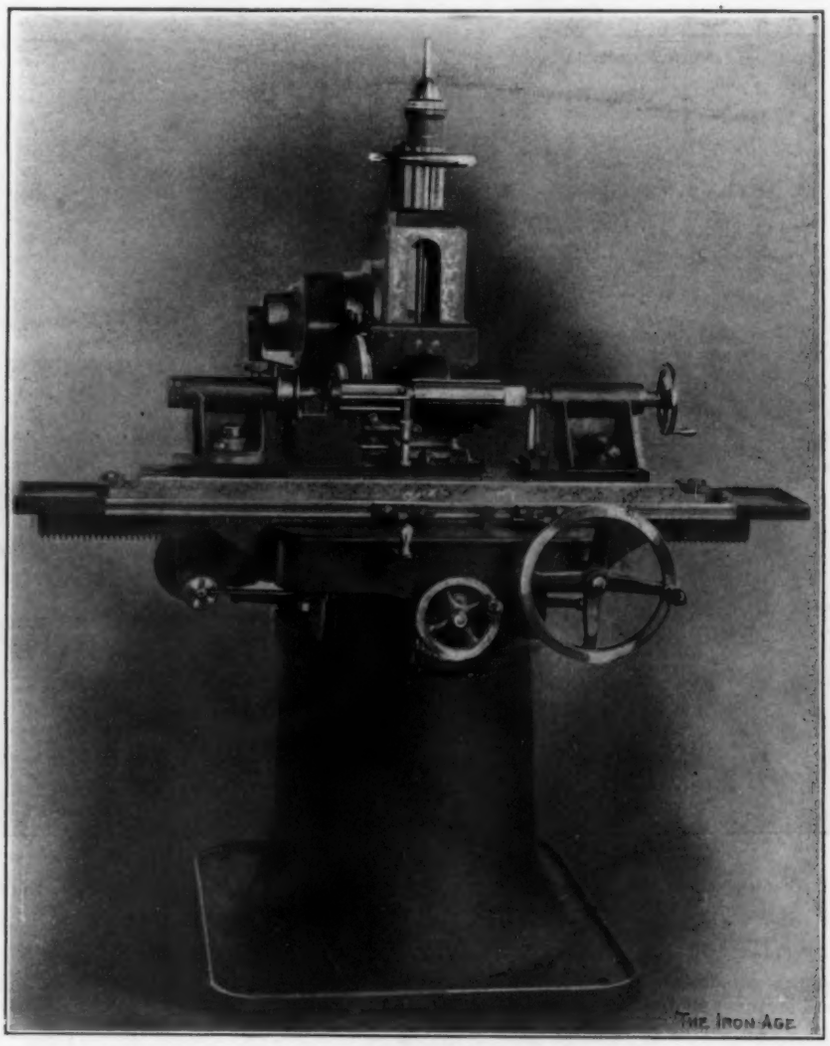


Fig. 1.—Front View of the Bath Grinder, Showing a 2½-Inch Reamer Being Ground with an 8-Inch Disk Wheel.

The wheel spindle is driven by belt in the manner shown in Fig. 2. The driving pulley, which belts to the pulley on the wheel spindle through an opening in the upright frame, is in one piece with the cone pulley to which power is communicated from the countershaft. The bracket supporting the cone and driving pulley is swiveled to allow the grinding wheel spindle to be moved vertically, the proper belt tension being maintained by

the rod connecting with the supporting arms of the pulley and upright frame. The end of this rod within the upright frame carries a coiled spring for maintaining the proper belt tension. The opposite end carries knurled adjusting nuts to vary the spring pressure and take up slack in the belt when it stretches.

For wet grinding water is delivered to the grinding wheels through a flexible hose by a circulating pump which draws the water from a reservoir within the main bed casting, into which the water drains again after being used.

It will be seen that the work carriage has a movement in two directions. With the carriage in the position shown in Figs. 1 and 2 there is a cross movement toward or away from the wheels. The cross slide, as will be noticed, has a very long bearing and never overhangs the bottom bearing on the flange. The cross movement is controlled by the small hand wheel shown at the front in Fig. 1, and the longitudinal movement through the larger hand wheel. The longitudinal slide is wide and has extra long bearings. For certain operations of grinding where it is desirable the longitudinal slide may be reciprocated by power through a belt connecting with the pulley shown in Fig. 4. It is limited in its movements by adjustable dogs on the side of the slide which may be set to trip the reversing mechanism. The slide may be set to stop accurately at any position for shoulder grinding or cutter work. When grinding the ends of cutter teeth the slide is moved by a micrometer adjustment.

A swivel plate is bolted on the longitudinal slide, and may be set at an angle with the latter for all operations of taper grinding, such as the grinding of centers, &c., as shown in Fig. 3. This plate has slots at the ends for clamping in the desired position, a longitudinal V-groove in which the head stock and foot stock slide, and tee slots by which they are secured at any desired position along the length of the plate. The head stock is graduated and arranged to swivel on the plate, which is useful in operations where the work is held in a chuck supported in the head stock. The head stock contains a quill for receiving a center or a chuck mandrel. The quill may be revolved by a pulley supported on a conical bearing at the end of the quill or may be held stationary, to give either a live or dead center, the change being made by the loosening of a screw. When the center is revolved the pulley is driven by belt from a drum countershaft.

When work is done on long pieces requiring a support between centers, a steady rest may be secured to the table plate between the centers. The tee slots of the table are also used for securing other attachments, such as a tooth rest, as shown in Fig. 1, the operation in this case being the grinding of a 2½-inch reamer. The foot stock has a spring center. A flat projection on the foot stock affords a support for a diamond tool used when truing the emery wheels, or a tooth rest stand for cutter grinding.

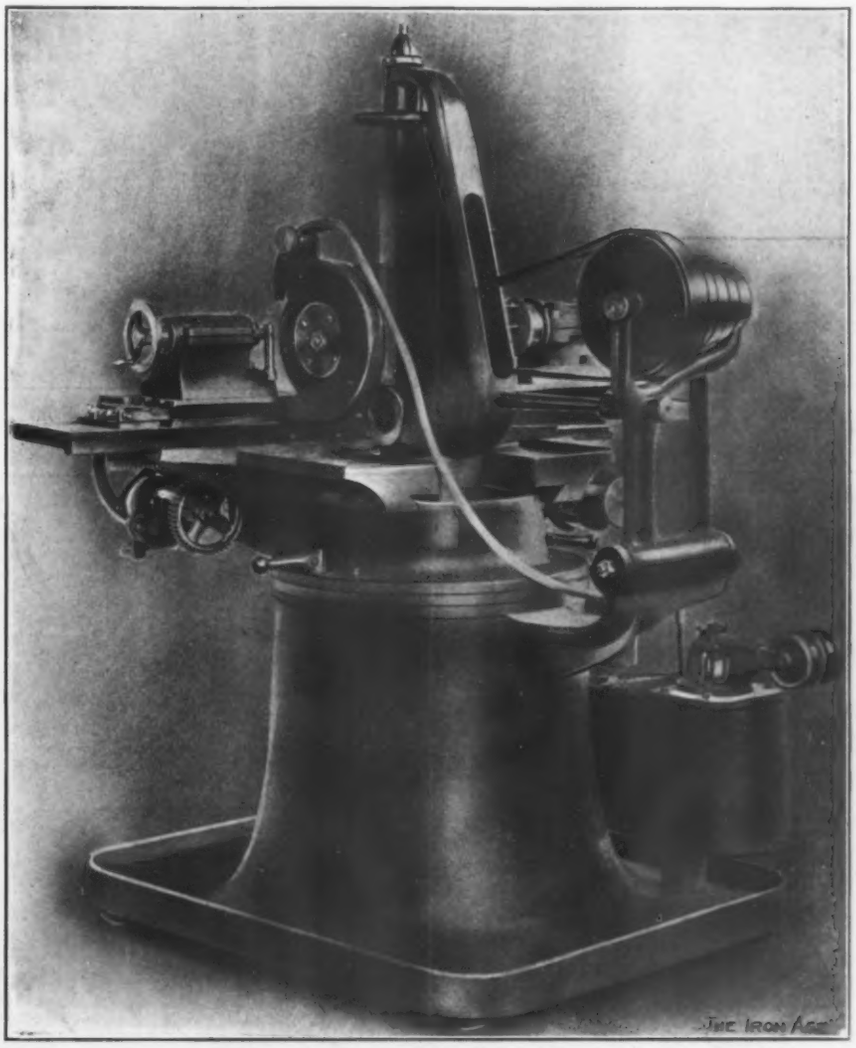


Fig. 2.—A Rear View of the Bath Grinder, Showing the Drive of the Wheel Spindle.

Other attachments which are used on the table in place of or in addition to the head stock and foot stock are shown in Fig. 5. The device to the right, known as the universal holder, is an especially ingenious contrivance which makes possible the holding of work in practically any conceivable position. The base casting bolted to the table holds a second casting which swivels on a horizontal axis. This casting, in turn, supports a plate which may be swiveled about a vertical axis. A vise shown in the figure is secured to this latter plate where it is desirable to hold the work in a device of that character. The vise may be removed and the work held directly on the plate upon studs which may be screwed into the various holes provided in the plate for that purpose.

The device to the left is a V-vise for supporting round work, and may be substituted for the plate, the stems of both being interchangeable. A graduated circle on the V-vise assists in the setting to any required angle. The work to be held is placed in the V-trough, and the swinging member just above is brought down upon it, latched in the nearest notch, and is then tightened in position by the screw above, which forces the pawls down to engage the notches. The form of the whole affair is of advantage in certain operations of grinding where it is desirable to pass the wheel across the vise, as, for instance, when fluting taps or reamers, as the form of the clamping device does not interfere with such movements.

The wheel spindle slide has a vertical movement of 7 inches. The setting of this slide may be accomplished with extreme nicety by clamping it to a micrometer screw which is raised or lowered by the hand wheel at the top of the machine. The screw is graduated in sixteenths of an inch and the wheel to 125 divisions, making it possible to set this slide to within one one-thousandth of an inch. By this means clearances are obtained for all kinds of cutter and reamer grinding and locations for various other operations. In the operation shown in Fig. 1, for example, the reading for clearance when the wheel was raised above the center was ⅛ and 10-1000. In one class of operations it is easier and quicker to reciprocate the wheels vertically than to pass the work across the wheel by moving the longitudinal slide. When a quicker movement is to be used the wheel slide is released from the screw and is moved up and down by the lever shown in Fig. 4. The slide is counterbalanced by means of the weight shown, so that the movement up and down is performed with very little exertion. To limit the down movement of the slide an adjustable rod passing through the slide is locked to it by a set screw and arrests its down movement by impinging on a projection of the upright frame. This is shown in Fig. 4, but is more clearly seen in Fig. 6. The latter illustration shows the setting of the machine for the grinding of the side faces of a milling cutter. It also indicates one of the many possible positions of the work holding device which has been described and is shown in Fig. 5.

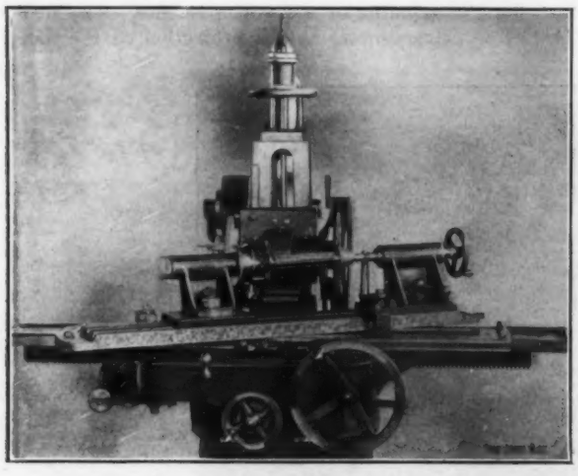


Fig. 3.—The Setting of the Machine to Grind a 20-Degree Taper.

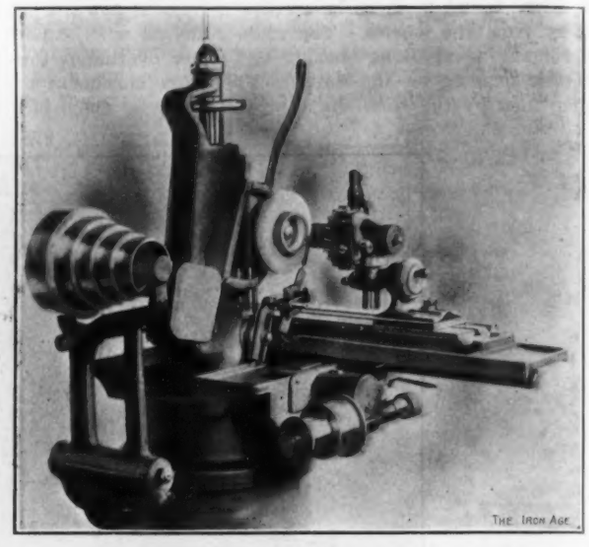


Fig. 4.—The Setting to Grind the Spiral Teeth of an End Mill.

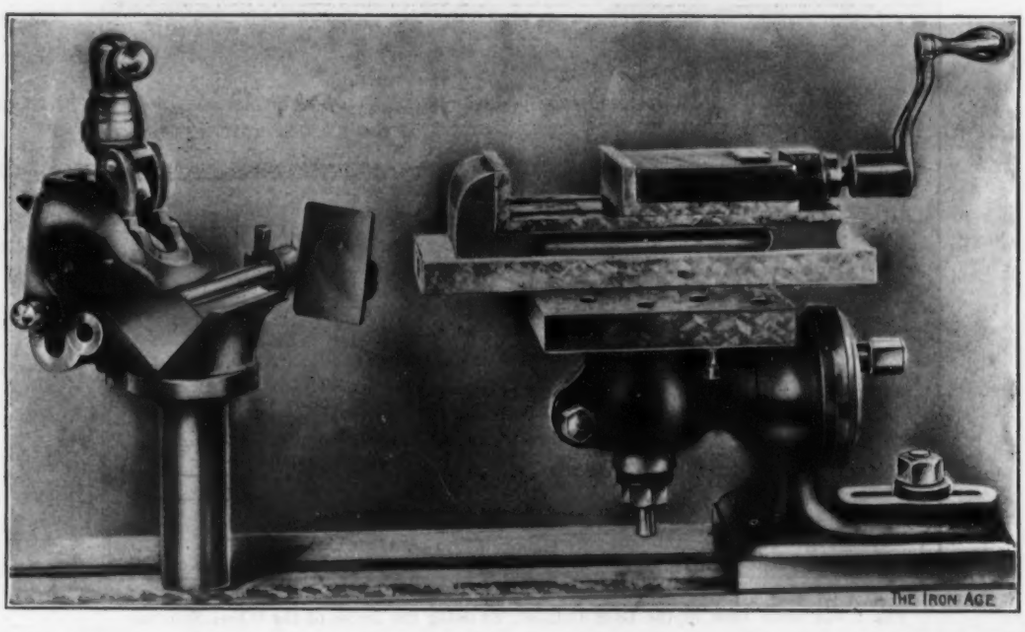


Fig. 5.—The Universal Holder with the Flange Plate and Vise Mounted on Holder and the V-Vise Removed from Holder.

An extended range of uses of this device is made possible by inverting it, clamping the plate to the table and allowing the former base to extend upward for the mounting of work on its bottom face. An instance of this use of the device is given in Fig. 7, showing the setting of the machine for the grinding of a convex milling cutter. The same figure shows the longitudinal slide swung upon its pivot flange into a position at right angles to that occupied in the previous figures. The grinding head in this case, as before, is moved vertically by the hand lever to pass the wheel across the work. The milling cutter is mounted so that the center of the radius of its contour is in a vertical line with the center of the pivot of the work holding device. The clamping screw is loosened so that the swinging of the bracket in the

horizontal plane causes the wheel to grind the proper curve on the cutter teeth. The tooth rest is a part of the attachment which supports the work.

For internal grinding operations an attachment is used which is shown in Fig. 8, and one of the grinding wheels of the wheel spindle is replaced by a pulley. This pulley belts to a small pulley on the spindle with the little internal grinding wheel which is held in the end of the arm. The attachment is secured to the machine by a stem fitting in a hole in the upright frame, as may be

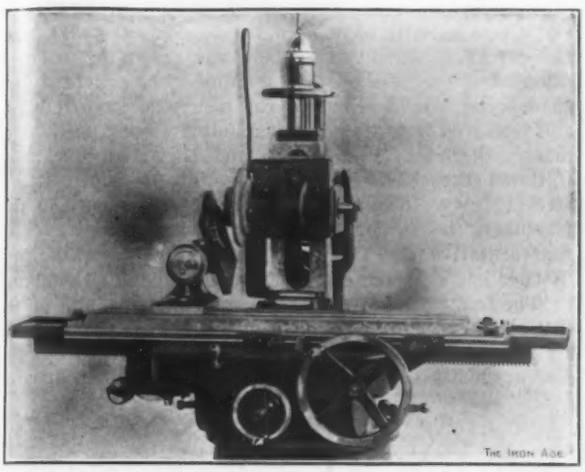


Fig. 6.—Grinding One Side of a Face Milling Cutter with a Cup Wheel.—The Other Side and Face Are Ground Without Changing the Position of the Machine, Holder or Wheel.

best seen in Fig. 2. A lever in line with the stem entering this hole, and which may be seen in Fig. 8, controls an expanding clamping device to lock the arm when the desired position of the grinding wheel is obtained. The belt for the driving of the fixture is tightened by raising the main grinding wheel head.

It would be out of the question to go into all of the operations which are possible to this machine. Such as have been outlined and illustrated have been selected because of their wide difference, indicating the great range of work that the machine will handle. The use of interchangeable wheels of various forms opens up another line of possible operations of great variety. The cupped and disk form of grinding wheels are those most com-

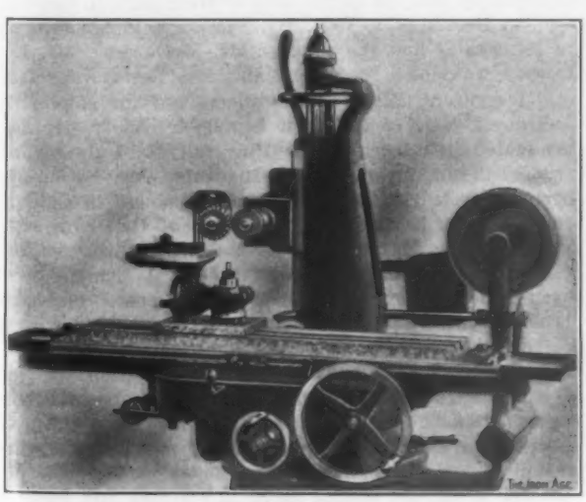


Fig. 7.—Grinding a Convex Milling Cutter, Using the Universal Holder and Tooth Rest Stand.

monly used. A special wheel which is practically a combination of the two forms has been designed by the inventor of this machine and is shown in Figs. 1, 4 and 6. Its use avoids the changing of wheels to accommodate changes in the character of the work in a great many cases, and hence is effective in economizing time.

The *Nautical Gazette* lists the daily coal consumption at sea of some of the prominent liners entering New York as follows: St. Paul, 350 tons; Oceanic, 480 tons; Lucania, 475 tons; Deutschland, 570 tons; Kaiser Wilhelm der Grosse, 500 tons; Kaiser Wilhelm II, 600 tons.

The Georgia Iron & Coal Company.—This company, whose main office is at Atlanta, Ga., is arranging for the erection of 200 coke ovens in the immediate vicinity of its blast furnace at Rising Fawn, Ga. Bids are now being invited from contractors. The company has hitherto brought its coke partly from the coke region in southwestern Virginia and partly from its own ovens, but the latter are situated about 50 miles from the blast furnace. The location of the coke ovens in close proximity to the furnace is expected to effect a saving over the present cost of coke delivered at the works of about $1.50 a ton for pig iron, or over $100,000 a year on the output of the furnace. Bids are also being invited for reopening the red fossiliferous ore mines immediately at the furnace. At present the company is receiving all its ore from its brown ore mines in Bartow County. When the red ore mines are in readiness to furnish a supply of ore the furnace will be operated on a mixture of brown and red ores. The Georgia Iron & Coal Company has a property which compares very favorably with the properties of the largest iron companies in the South.

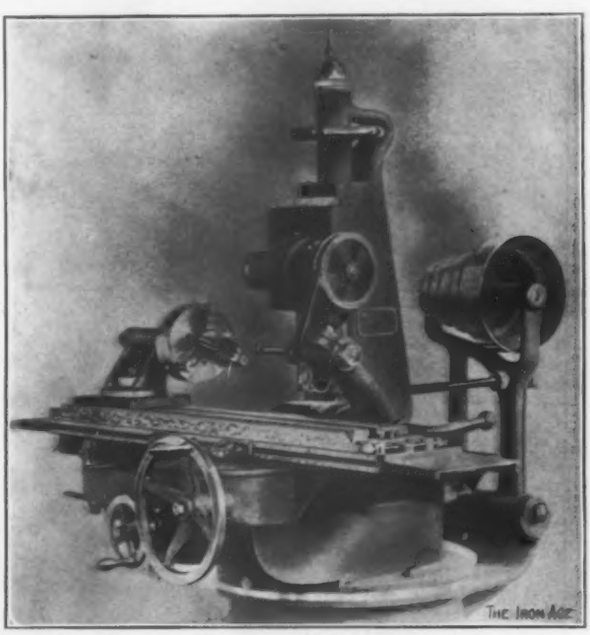


Fig. 8.—The Grinder Equipped for Internal Grinding, with the Work Held in a Chuck in the Head Stock.

It comprises over 50,000 acres, extending through three counties in Georgia and one in Alabama, very rich in minerals, comprising fine seams of good coking and steam coal as well as large beds of red fossiliferous, brown and manganese ores. The brown ore mines are claimed to be the largest in the South. The deposit of manganese is the largest so far discovered in the United States, the leading mine being the Chumler, which has attained distinction for its output as well as its quality.

Two 5000-kw. generators in the De Cew Falls power station of the Hamilton Cataract Power Company of Canada have recently been started. Power is supplied from the Welland Canal feeders, tapped in about 14 miles above the station, and the available head is 267 feet. The generators are of the two-bearing type, direct connected to Escher-Wyss wheels, running at a speed of 286 revolutions per minute. Three-phase current is generated at a frequency of 66 cycles per second and a voltage of 2400. The power is transmitted 35 miles to Hamilton at a pressure of 20,000 volts at present, which pressure is ultimately to be increased to 40,000 volts. A reserve steam driven station at Hamilton contains two 1000-kw. units. The power is used for lighting, traction and manufacturing purposes.

The Bliss Improved Auger Bit Heading Press.

An automatic auger bit heading press embodying a new idea in a machine of its character has lately been built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., and is shown in the accompanying illustrations. Heretofore, prior to heading, the bit has always been clamped in jaws operated by a hand actuated lever, but in the new machine the clamp is entirely automatic, being operated by a cam on the shaft. This makes it possible for the operator to use both hands in feeding, and the machine has a work capacity one-third greater than other types of presses for this work.

The operation of the press will be understood by reference to Fig. 1. By depressing the foot treadle the wheel which runs continuously is clutched to the shaft. This causes the slide carrying the heading die to descend, and at the same time the cam on the shaft, already referred

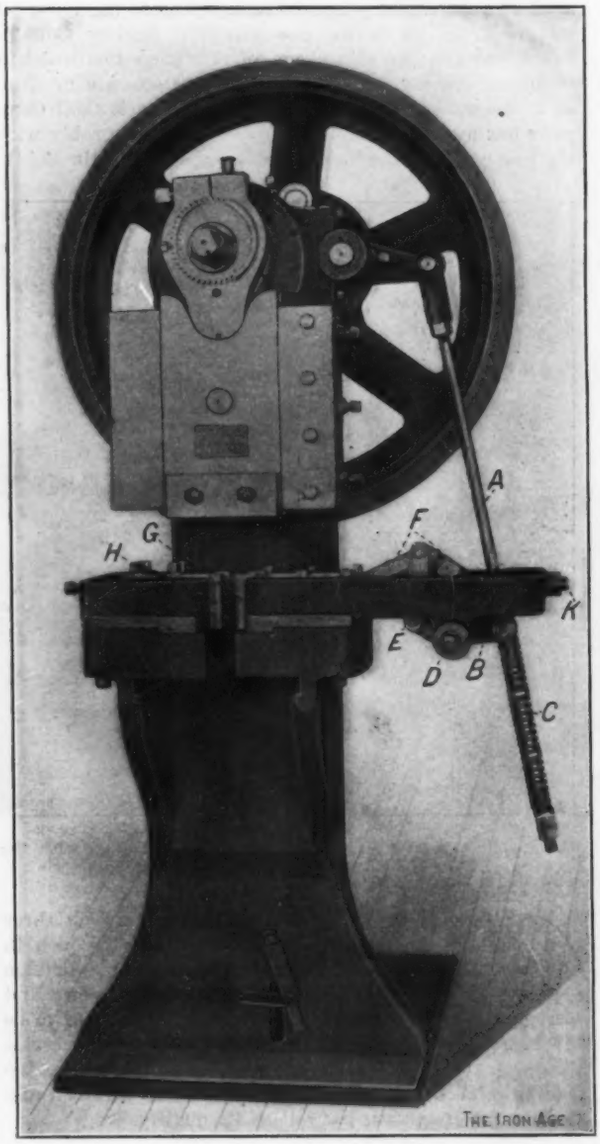


Fig. 1.—The New Bliss Automatic Bit Heading Press.

to, raises the rod A. This rod passes through one end of the lever B and is connected to it fairly rigidly by means of a spring, C. The fulcrum of the lever is at D, and as the rod is raised it pulls down the end of the lever E, which straightens out the toggles F, causing the jaw G to approach the jaw H and clamp the bit. This clamping movement takes place just before the punch does the heading, and as the slide again ascends the jaws open and the bit falls out. The object of the spring C is principally to allow for inequalities in size of bits due to such variations as are apt to occur in forging. The spring compensates for such inequalities and always maintains a uniform grip on the bit. K is an adjusting nut for setting the jaws at an approximately correct position for the different sizes of bits. The jaws are removable and of cast iron, being very cheaply made. They are recessed with threads of the same pitch as the bit which they are to hold, to afford a very firm support to the bit. Fig. 2 shows the ends of an auger such as the machine is intended to handle, before and after being headed. The heading operation is performed while the bit is hot.

McDowell, Stocker & Co.

In April next the business of McDowell, Stocker & Co., Chicago, will have been established 10 years, and the extent to which their trade has grown in so short a period of business life is a tribute to the practical and commercial qualifications of the men who gave it birth and nurtured it to its present standing among machinery firms. Both David McDowell and H. A. Stocker, who initiated the partnership business at 61 South Canal street, May 1, 1895, had seen years of experience in the machinery trade, Mr. McDowell having been traveling representative for Chas. H. Besly & Co., while Mr. Stocker had represented the Diamond Machine Company.

The foundation of the firm was principally laid on its sale of second-hand machinery, a business at that time in its infancy in Chicago, but the partners reached out for and gradually acquired the agency for excellent lines of

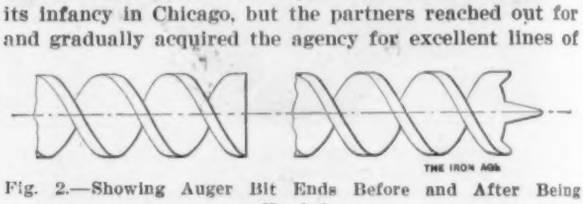


Fig. 2.—Showing Auger Bit Ends Before and After Being Headed.

new machines. The business prospered. In 1899 it was incorporated, with Mr. McDowell and Mr. Stocker equal shareholders. Mr. McDowell was made president and Mr. Stocker secretary and treasurer. In the meantime the premises at 61 South Canal street were outgrown and the store at 59 and the second floor were added. Finally, in 1903, even this space was inadequate, and the company leased the entire building at 59 and 61 South Canal street, including four floors and basement.

David McDowell died in June, 1904. At that time his son, W. J. McDowell, and E. L. Essley, who had been in the employ of the company for five years, were negotiating for the purchase of Mr. Stocker's interest. Mr. McDowell's sudden death put an end to the transaction temporarily, but the matter was revived again in October, and on December 1, 1904, Mr. Stocker sold his interest to Mr. Essley and the younger Mr. McDowell. Mr. McDowell was made president and Mr. Essley secretary and treasurer. W. J. McDowell entered the employ of McDowell, Stocker & Co. in September, 1902. He had graduated in science at the University of Chicago and studied mechanics at Armour Institute. Mr. Essley has been interested in the machine tool business in Chicago for 15 years, having for eight years of that time been with Manning, Maxwell & Moore's Chicago store.

Under this new management several changes have been made, particularly in office arrangement. The office is now located on the first floor and is provided with a private telephone system. The long lease on the warehouse which the company has utilized has been disposed of and the store immediately adjoining the present offices to the south has been opened. This easy accessibility to stock is a great convenience. Among some of the leading machine tools of the country for which McDowell, Stocker & Co. are selling agent in Chicago and vicinity are the following: Becker-Brainard milling machines, Bradford engine lathes, Burke bench milling and tapping machine, Colburn boring mills, Fosdick radial drills, Hamilton engine lathes and drill presses, Bellmer planer, Whitcomb single belt drive planer, Consolidated power presses, Kempsmith milling machines, Springfield engine lathe and shaper, Milwaukee shapers, Diamond Machine Company's grinders, Harrington lathes and multiple spindle drills and Walcott shapers.

Financial interests represented by Kidder, Peabody & Co., Boston, Mass., and the Shaw Syndicate have com-

bined with the purpose of building an air line electric railroad between Boston and Providence. The purpose is to establish a road quite modern in every respect, to operate high speed cars between these important cities.

Steel and Iron Wrought Pipe.*

Threading and Relative Durability.

BY FRANK N. SPELLER, NATIONAL TUBE COMPANY, PITTSBURGH.

Soon after soft steel began to supersede wrought iron in general engineering construction on account of its superior strength, ductility, toughness and uniformity of composition the question of relative durability was brought up. This led to many elaborate experiments under conditions approximating those which promote corrosion in practice, which have been continued and discussed by many of the best investigators for the past 25 years.† The most trustworthy of these results up to 1892 have been concisely reviewed and compared by Prof. Henry M. Howe‡, with the conclusion that so far as the relative corrosion is concerned no important difference exists between iron and steel, although the variable effect of different conditions is more marked. Later, in 1895, the same investigator expresses his conclusions in a paper entitled "Relative Corrosion of Wrought Iron and Steel," in the following terms:

> It is misleading to say that normal low carbon steel corrodes more or that it corrodes less than wrought iron, since the relative corrosion varies with the inclosing medium. I think that we have every strong reason to believe that such steel, when carefully made, resists corrosion in fresh water as well as wrought iron; in cold sea water at least nearly as well as wrought iron; and in acidulated water better than wrought iron.

At the meeting of the International Society for Testing Materials in 1900 Professor Howe gave further data from some large scale experiments conducted by himself, in which he exposed a number of plates of wrought iron, soft steel and nickel steel ⅛ inch thick to the action of sea water, river water and the weather for two periods of one year each. The results are summed up as follows:

	Loss by corrosion.			
	Sea water.	Fresh water.	Weather.	Average.
Wrought iron	100	100	100	100
Soft steel	114	94	103	103
3 per cent. nickel steel	83	80	67	77
25 per cent. nickel steel	32	32	30	31

Prof. R. H. Thurston§ from his tests and observation of these materials in practice concludes on the whole that steel resists corrosion better than iron.

Navy Department Tests on Pitting.

The most dangerous form of corrosion in pipes is pitting. Some tests made by the United States Navy Department‖ during the past three years give some interesting data on this point, and suggested further investigation along this line to the writer, results of which will be given later. The Navy Department tests were made in aerated distilled water at normal temperature of room on 48 pieces, each of the following materials: Charcoal iron, Bessemer steel and hot and cold drawn seamless tubes made from the same lot of open hearth steel.

The samples were of steel from all parts of the ingot and were insulated in 12 porcelain lined tanks, a plentiful supply of pure air being supplied through perforated glass tubes. At the end of each period of 16 weeks the samples were removed, cleaned and weighed. While under test every precaution was taken to subject each piece to the same environment as the others. It will be seen that essential conditions of corrosion—namely, oxygen, carbonic acid and moisture—were here given free play. The following are average results, compiled from the experimental data:

Table I.—Average Loss in Grams Per Square Inch.—Samples from 3-Inch Boiler Tubes.

	After 16 weeks (1st 16 weeks).	After 32 weeks (2d 16 weeks).	After 48 weeks (3d 16 weeks).	After 64 weeks (4th 16 weeks).	Total average loss 64 weeks.	Comparing with iron as 100.
1. Hot drawn seamless open hearth steel	0.3034	0.5333	0.3510	0.5070	1.6947	93.7
2. Lap welded Bessemer steel	0.3147	0.4950	0.4043	0.4945	1.7085	94.5
3. Cold drawn seamless open hearth steel	0.3232	0.5564	0.4502	0.5017	1.8315	101.3
4. Charcoal iron	0.3326	0.5896	0.3966	0.4893	1.8081	100

Average Analyses of Material Under Test.

	Cold drawn seamless.	Hot drawn seamless.	Bessemer steel.	Iron.
Silicon	0.005	0.005	0.008	0.024
Sulphur	0.043	0.039	0.081	0.014
Phosphorus	0.015	0.016	0.110	0.038
Manganese	0.50	0.49	0.31	Trace.
Carbon	0.16	0.14	0.063	Trace.
Oxide and slag	..	..	..	1.03

The individual losses show an equally wide variation for all classes of material. All pieces were carefully photographed after the first and fourth periods of 16 weeks. Those showing the greatest and least loss in weight are reproduced herewith for Bessemer steel (Fig. 1) and charcoal iron (Fig. 2).

The least and greatest average losses, it will be noted, were sustained by open hearth steel, while iron and Bessemer steel show no important difference, but lie between the maximum and minimum. This goes to show that any slight difference in corrosion due to essential differences in composition of these materials is insignificant compared with other considerations.

The photographs show that the pitting is relatively equal, as near as can be seen in each class of material, except in the case of the cold drawn seamless tubes, which had a very thin scale and were but slightly pitted. This disproves the claim of some manufacturers of wrought iron that it does not pit.

Mill scale being electro-negative to iron (about 4-10 volt) is evidently largely responsible for the deep corrosion on bare metal adjacent to firmly attached scale*. Further, it has been found that duplicate plates of iron and steel, exposed with and without mill scale on their surfaces, sustain nearly the same loss in weight, the clean surface being uniformly corroded, while the scale bearing surface is more or less pitted. This explanation of the cause of pitting, which seems to satisfactorily account for the facts observed, applies equally to all classes of iron and steel.

Experiments by the National Tube Company.

The effect of contact of dissimilar irons and steels with each other and with plates of the same material carrying the natural mill scale was the subject of experiments made at the laboratory of the National Tube Company, McKeesport, Pa., last year. The results averaged and condensed are given in Table II. In these experiments test pieces were prepared by removing all mill scale.

In these tests, made in hot aerated solutions, the common iron and Bessemer steel appear to be almost equal, while both resist corrosion somewhat better than the higher grade charcoal iron, but the difference cannot be said to be important.

The corrosion of those pieces electrically connected did not increase as a rule, as might have been expected. This may be explained by the coating (largely consisting of ferrous oxide) produced on adjacent sides of connected plates, which seemed to successfully resist further oxidation. Galvanometer tests showed a variable and rapidly decreasing electromotive force, which often reversed its polarity at intervals of an hour or so. The electromotive force between these materials was quite variable, but was usually less at the maximum than one-fifth the potential between magnetic scale or rust and iron or steel.

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* Paper read at the annual meeting of the Canadian Mining Institute, at Montreal, Canada, March 2, 1905.

† T. Andrews, Inst. C. E., Vol. LXXVII, p. 323; Vol. LXXXII, p. 281. Inst. C. E., Vol. LXV, p. 101. Bessemer and Siemen's observations. Inst. *Journ.*, 1881, Vol. I, p. 39, W. Parker (Lloyd's Register).

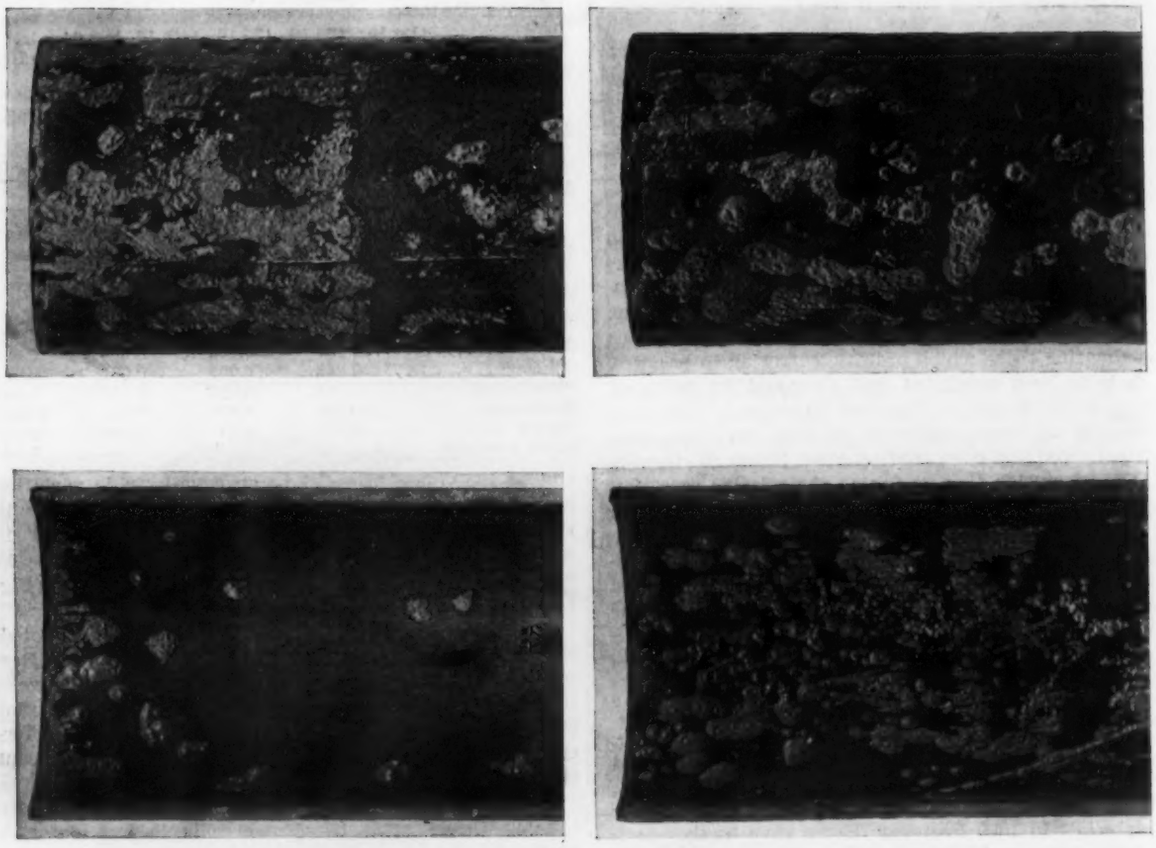
‡ "Metallurgy of Steel," H. M. Howe, page 94.

§ "Materials of Engineering," Sec. on "Iron and Steel."

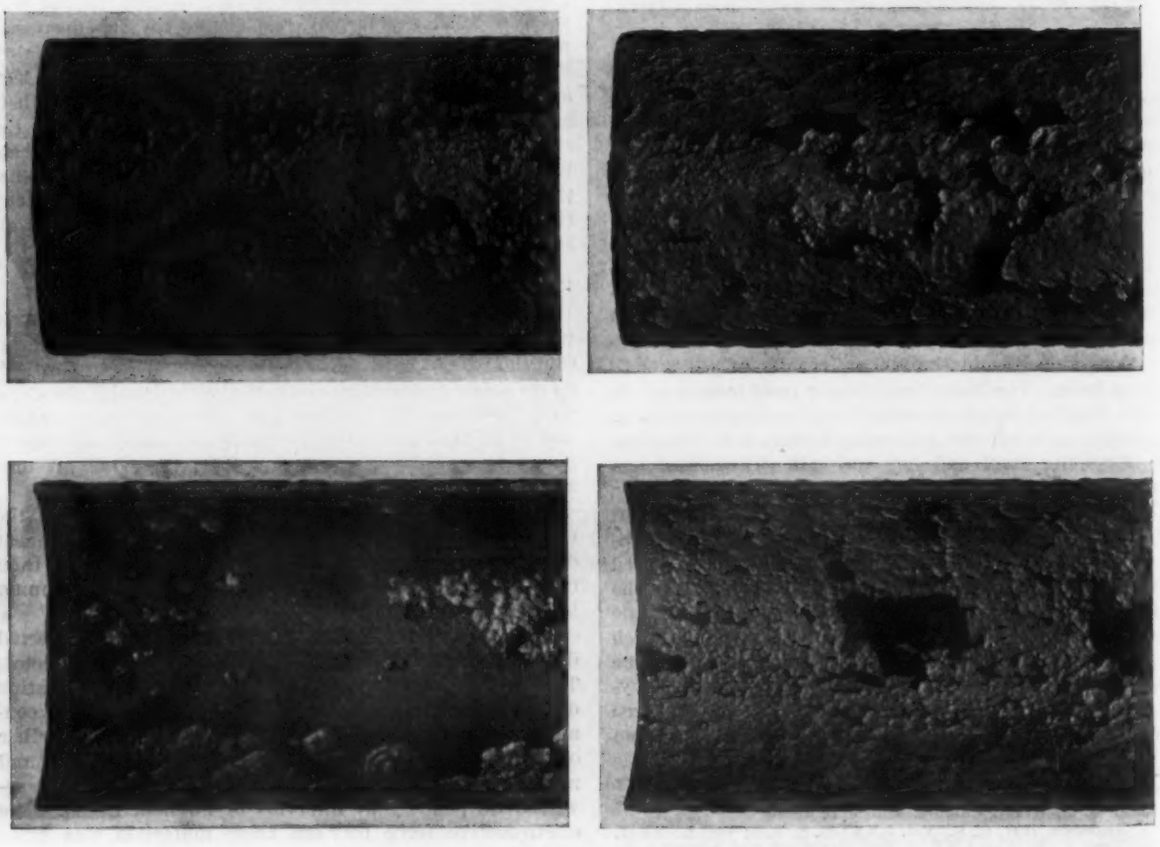
‖ *Journal* American Society of Naval Engineers, May, 1904, paper by Rear-Admiral Ford.

* *Journal* Iron and Steel Inst., 1879, Sir E. Barnaby, p. 53. *Journal* Iron and Steel Inst., 1887, Vol. I, p. 461.

Least. Greatest.



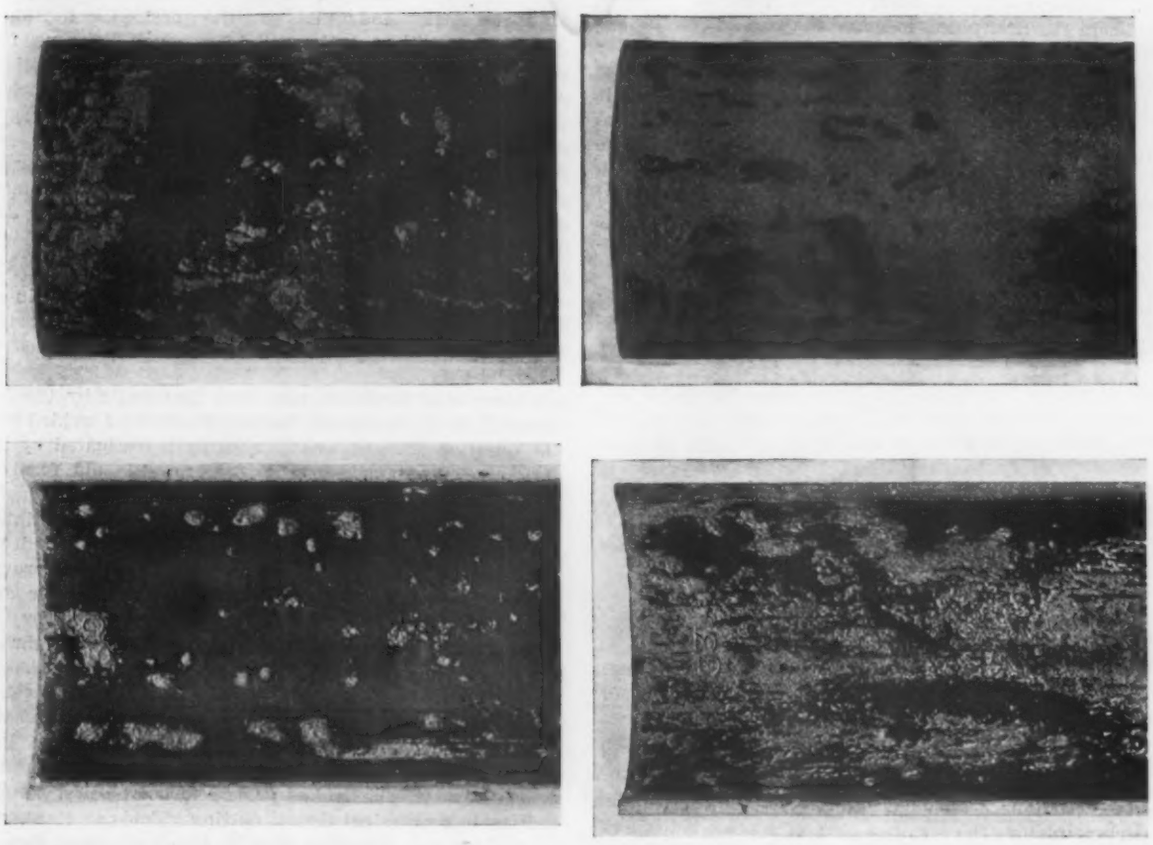
Showing Corrosion After 16 Weeks' Exposure.



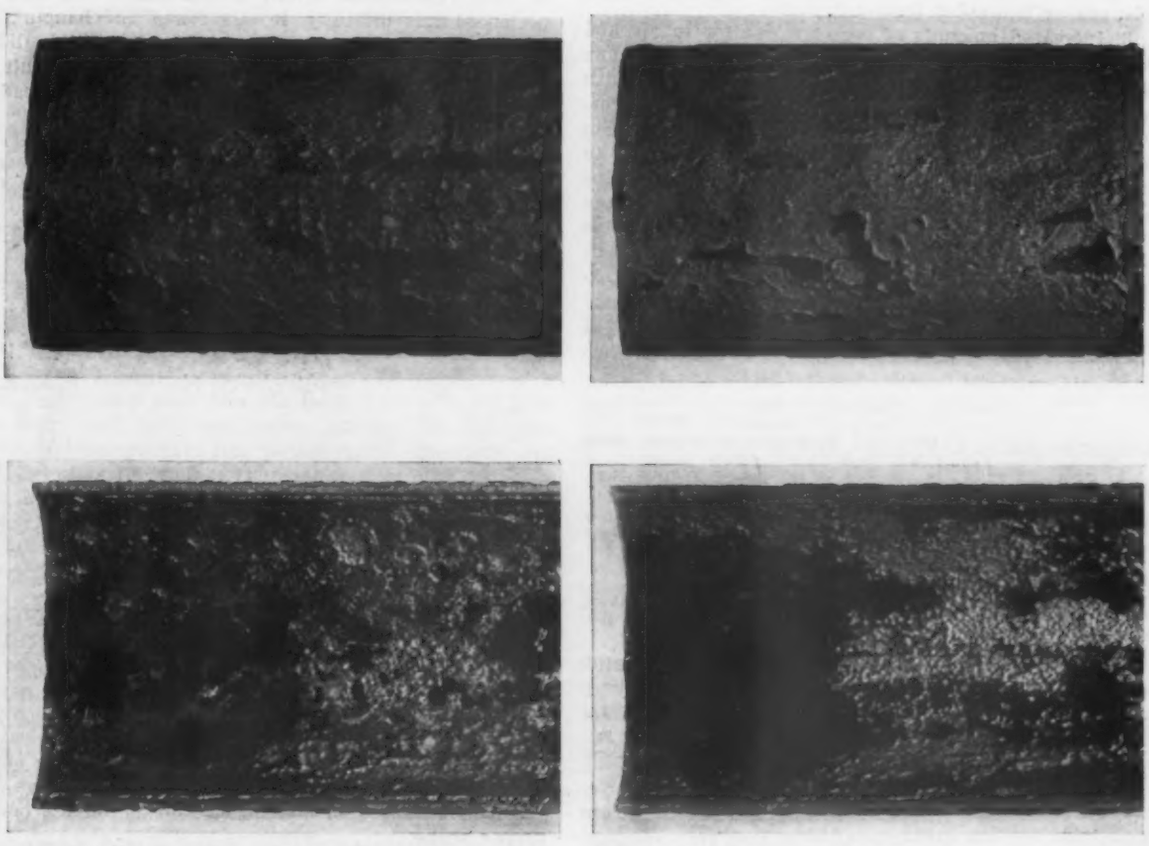
The Same Samples After 64 Weeks' Exposure.

Fig. 1.—Tests for Pitting of Soft Bessemer Steel Lap Welded Tubes, Made by the United States Navy Department.

Least. Greatest.



Showing Corrosion After 16 Weeks' Exposure.



The Same Samples After 64 Weeks' Exposure.

Fig. 2.—Tests for Pitting of Charcoal Iron Lap Welded Tubes, Made by the United States Navy Department.

Experiments on a small scale are limited to certain fixed conditions, which approximate to those in practice. Observations of corrosion of pipe in practice should, in the first place, to make the results worth anything, be made on material in use under the same influences, to insure which both materials should be in use at the same time. In making observations in the field it is often difficult to determine just what conditions prevail and whether both materials are subject to the same environment, for the conditions which most influence the rate of corrosion, besides oxygen or carbonic acid with moisture, which may be considered as primary causes, are intricately involved. They included principally:

1. Galvanic action by (A) metallic contact;* (B) heating of one portion of the metal (thermo-electric action); (C) the difference of potential between strained and unstrained portions, which has lately been shown to be an important factor; the strained part of a piece being electro-positive to the unstrained portion, corrodes quicker.†

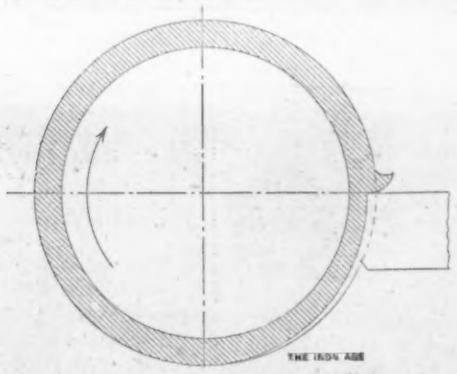


Fig. 3.—Incorrect Form of Die Chaser.

2. Electrolysis‡ is a widespread and increasing accelerator of corrosion, which all precautions cannot entirely prevent. A difference of potential of 1-1000 volt is sufficient to increase corrosion considerably, and this may exist one or two miles from a dynamo.

3. Increased amounts of corrosive matter in air and water, especially near the large centers of population, where the greater portion of pipe is in use, together with the complicated and far reaching action of stray currents, have materially increased the danger of corrosion during the past 10 or 15 years, since steel pipe began to be generally adopted; hence a fair comparison with pipe in use at a previous date is clearly impossible. Yet many declaim and deplore the degeneration of present day pipe material. Fortunately much energy is being better spent in providing efficient protection for iron and steel exposed to such corrosive conditions.

*Table II.—Loss in Milligrams Per Square Inch, Exposed 500 Hours in Aerated Water at 175 Degrees F.—Pieces in Electrical Contact and Insulated * as Indicated.*

Nature of solution.	Charcoal iron. (C. I.)		Common iron. (Z.)		Bessemer steel.		O. H. steel.	
		With		With		With		With
Distilled water...	188	*	180		174		185	
	154	Bess.	130	O. H.	150	C. I.	165	Bess.
	140	Z.	100	C. I.	173	O. H.	122	Z.
Alkaline boiler water	192	*	223		240		224	
	230	Bess.	175	O. H.	210	C. I.	230	Bess.
	190	Z.	177	S. E.	163	O. H.	200	Z.
Ferrous Sulphate in hot water *without air*—15 grains per gallon.....	51	*	50		56		41	
	57	Bess.	53	O. H.	25	C. I.	28	Bess.
	54	Z.	75	C. I.	66	O. H.	46	Z.
Strong sodium.....	335		292		186		210	
Sulphate solution, slightly alkaline..	504	Mill scale.	394	Mill scale.	454	Mill scale.	420	Mill scale.
Boiler water (150 lbs. pressure) carrying ferrous sulphate, 50 grs. per gallon	2,022	Z.	1,765	C. I.	1,985	C. I.	1,442	Z.
	1,087	Bess.	1,565	O. H.	1,970	O. H.	1,495	Bess.

Analysis of Above Material.

Sulphur	0.015	0.030	0.061	0.030
Phosphorus	0.020	0.140	0.098	0.005
Manganese	Trace.	Trace.	0.31	0.42
Carbon	Trace.	Trace.	0.17	0.11
Oxide and slag.....	0.80	1.70	..	..

* *Transactions* R. S. E., Vol. XXXII, p. 218.

† *Bulletin* of University of Wisconsin, No. 2, Engineering Series, Vol. II, No. 8, July, 1900.

‡ "Rustless Coatings" (Wood), p. 370. Wiley & Sons, 1904.

After all probably the best evidence of the practical insignificance of the difference between the rate of corrosion of these materials is the fact that after 25 years of investigation and discussion the question is not absolutely settled, there being still just enough difference one way or the other to indicate that under some conditions each material has a small advantage over the other, while in the majority of cases the differences are hardly perceptible. Research and observation to date on the corrosion of iron and steel therefore point to the conclusion that any difference is more a question of environment than an inherent superiority of one material over the other.

Threading.

In certain districts much has been heard from plumbers and steam fitters on the difficulty of threading steel pipe, particularly in the field where hand tools must be used.

When soft Bessemer steel was first made by the National Tube Company for the manufacture of welded pipe the question of tools was thoroughly investigated by the threading departments. Fig. 3 shows the old form of chaser which will cut a fair thread on iron, as the metal is weak enough and so broken up in structure by interspersed cinder as to be more or less readily scraped out with such a tool. Bessemer steel of the quality proved to be best adapted for pipe, being much tougher and stronger than wrought iron, cannot be pulled up by the roots in this manner, but a clean and easily cut thread may be made by putting an angle of shear on the chaser, as illustrated in various forms (Fig. 4). Care as to clearance and lubrication* will also greatly facilitate the work.

In machine threading at the National Tube Works a proper form of chaser has proved to be the first consideration in economical thread cutting. Tools so constructed will cut soft Bessemer steel or iron with equal ease.

A recent investigation on hand threading tools clearly showed that few are made on this principle, hence the trouble complained of by those using such tools on steel pipe was not hard to explain. After some experimenting in co-operation with several steam fitters who had experienced this difficulty it was found on changing the angle of the shear that there was no perceptible difference in threading either iron or steel, and the result invariably gave a much stronger and cleaner cut thread on the steel pipe.

Many cases of split joints, which necessitated the costly removal of lines, have been traced to excessive torsion strains produced by the use of poor threading tools. The damage is usually charged to poor welds, but as every piece must pass the tester† before leaving the works the chance of a defective seam getting out is reduced to a minimum. Moreover, experience shows that the trouble ceases on altering the die or buying one of proper shape.

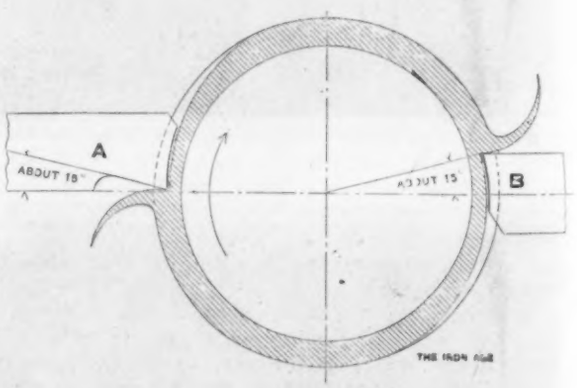


Fig. 4.—Correct Forms of Die Chasers.

Although the makers of hand and machine dies for

* Good lard or cottonseed oil should be used in liberal quantities.

† Pipe made at National Tube Works is all tested from 600 to 2500 pounds per square inch, according to the purpose for which it is made.

threading soft Bessemer steel pipe rarely give the chasers sufficient rake, this may be easily rectified when a good emery wheel is at hand. Other important features which should be embodied in properly constructed dies cannot be so easily remedied if neglected in the process of manufacture. The chasers should be firmly gripped by the die head close to the work, as in good lathe practice, to avoid chattering. A slight amount of clearance from the cutting edge back is very desirable, but is nearly always lacking in hand dies. It is also essential that the lead should be carefully adjusted so as to equalize the work and make the threading easy to start. The die in which these points are properly proportioned and which also conforms closely to the established standard of thread is undoubtedly the cheapest tool in the end. The vexatious delays and damage to pipe through split seams caused by poor tools is causing a general demand for better dies for use in the field.

Bursting tests on three classes of wrought iron and steel pipe, made by Professor Howe* in 1897, gave the following results in pounds per square inch:

	2-inch line pipe.	2-inch tubing.	5⅝-inch casing.
Wrought iron, minimum	1,000	3 300	250
Steel, minimum	2,300	5.150	1,450
Wrought iron, maximum	4,000	5,000	1,400
Steel, maximum	6,000*	6,000*	2,750
Wrought iron, average	2,918	4,106	931
Steel, average	4,733	5,800	2,038

* This was the limit of pressure available.

A comparison of the average results shows that the steel pipes excelled the wrought iron pipes by 62 per cent. in the line pipe, 41 per cent. in the tubing and 119 per cent. in the casing. Professor Howe's report concludes: "To sum up, the steel pipes excel the wrought iron very greatly in bursting strength, very considerably in tensile strength and somewhat in offering less frictional resistance to the flow of water."

Further bursting tests recently made on standard butt welded pipe at the National Tube Works, McKeesport, Pa., gave the following results:

Size.	Steel. Pounds per square inch.	Iron. Pounds per square inch.
½ inch	6,500 (Did not burst.)	6,500 (Did not burst.)
⅝ inch	6,500 (Did not burst.)	6,500 (Did not burst.)
¾ inch	6,500 (Did not burst.)	6,500 (Slight leak.)
1 inch	6,500 (Did not burst.)	6,500 (Slight leak.)
1¼ inch	6,500 (Did not burst.)	5 000 (Burst.)
1½ inch	6,500 (Did not burst.)	4,400 (Burst.)

The average of a number of transverse tensile strength tests made on rings cut from separate pieces of butt welded wrought iron and steel pipe gave the following:

	Pulled in metal. Pounds per square inch.	Pulled at weld. Pounds per square inch.
Iron	34,520	24,540
Steel	61,850	46,080

This is a good index of the superior strength of a soft steel welded joint over one made with wrought iron, the soft steel butt weld being actually 33 per cent. stronger than wrought iron pulled in the same way, but not including the weld. The welded steel pipe evidently has a seam nearly twice as strong as that made of wrought iron.

Mild steel has had to live down prejudice in nearly every line where it has displaced wrought iron. The most suitable quality of Bessemer steel for pipe manufacture has been the result of much expensive experimenting, and has proved much more satisfactory in welding than wrought iron. The process of the manufacture of soft steel being a continuous one from the ore through the blast furnace, Bessemer converter, blooming mill, rolling mill and tube works, under one management, with critical inspection at each point, insures the highest practical degree of uniformity in product. Steel scrap from the pipe and rolling mills not used up by the Bessemer department finds a ready market at neighboring open hearth plants. It is not an uncommon practice by some works making "strictly wrought iron pipe" to use a considerable portion of miscellaneous steel scrap of various composition. This often results in hard spots and weak welds, which when discovered are frequently credited to intermixed steel pipe. The prejudice created is so strong in some minds that any defective pieces are at once put down to the accidental shipment of some steel pipe with the order. A few such cases were investigated recently by the writer, where it was found that some 50 defective pieces of pipe (mostly open welds) were all "wrought iron," much to the surprise of the consumers. The National Tube Company, which furnished facilities for this paper and many of the tests referred to, besides being the pioneer in the introduction of soft Bessemer steel pipe, manufactures wrought iron in certain grades, of which scrap of the same class is sometimes used to make up the center of the pile.

Naturally the makers of wrought iron pipe to whom a supply of suitable steel is not available make the most of the suspicion which the word "steel" still raises in the minds of some people not informed on the modern advances in this industry. It seems quite reasonable to suppose that the advantage of superior strength, ductility, homogeneity, finish and lower cost which accompanies the use of steel pipe would be more generally recognized if such misapprehensions as these regarding threading and corrosion were cleared up.

* Abstract in *Engineering Record*, October 1, 1903.

The Tehuantepec Railroad Route.

DURANGO, February 20, 1905.—It is interesting to note that while the journals of the United States are discussing the report of the chief engineer in charge of the construction of the Panama Canal, President Diaz, in company with Sir Weetman Pearson, has been making a tour of inspection over the Tehuantepec Railroad, and of the port works at both ends of the route. A few years ago some of the newspapers in the United States, more particularly those of an *amarillo* cast, were moved to hysteria when they contemplated this patriotic and praiseworthy undertaking of the Mexican Government. It was spoken of as "England's scheme to defeat the Nicaragua Canal," that route being then under consideration, and there was almost a disposition in belligerent editorial sanctums to make a *casus belli* of the fact that some 2000 workmen were pushing the Tehuantepec Railroad to a speedy completion. A special cable was sent from London to a leading daily under date of April 16, 1901. Omitting the sensational headlines, it reads thus:

Great Britain's plan to counteract the Nicaraguan Canal is an extension of the Tehuantepec Railroad to connect the Gulf with the Pacific, with a harbor at each end. Two thousand men are now at work. The line will be finished in four years. It will charge $2.50 a ton to handle a ship's freight, one-third of what the canal will have to charge to make 4 per cent. profit, and will handle it in one day, against three spent in the canal. Pearson & Co. of London are reconstructing the railroad into an interocean freight thoroughfare under an agreement made two years ago; the Mexican Government leasing the road to the British for 50 years. The line will be ready within four years. Harbors are being constructed at both ends, affording anchorage to the largest vessels. Pearson says: "We hope for 2,000,000 tons yearly on the railroad. If the (Nicaraguan) canal carries that it will have to charge 30 shillings a ton to make 4 per cent., against our charge of 10 shillings. Again, there will be a saving of time. We shall handle a ship cargo in one day against three spent in the canal. We have the best of the distance and a start of five years. Though the road is 190 miles long, it has 90 bridges, of iron and stone, which, with the steel rails, are coming from America."

Sir Weetman is also quoted as saying that "J. Pierpont Morgan has the greatest faith in the railroad and regards the canal scheme unfavorably."

Four years have passed since the publication of this telegram. The president of the republic has just returned to the capital from his trip of inspection, before spoken of, and it is gratifying to report that he was everywhere received with acclamation, and that he found the great enterprise in which he has taken so deep an interest, and which has cost the country so much money, well on the way to completion, both as to track and terminals. Another year will in all probability see the port works finished, with every facility for the quick loading and unloading of freight. Says the Mexican *Herald*, referring to the return of President Diaz:

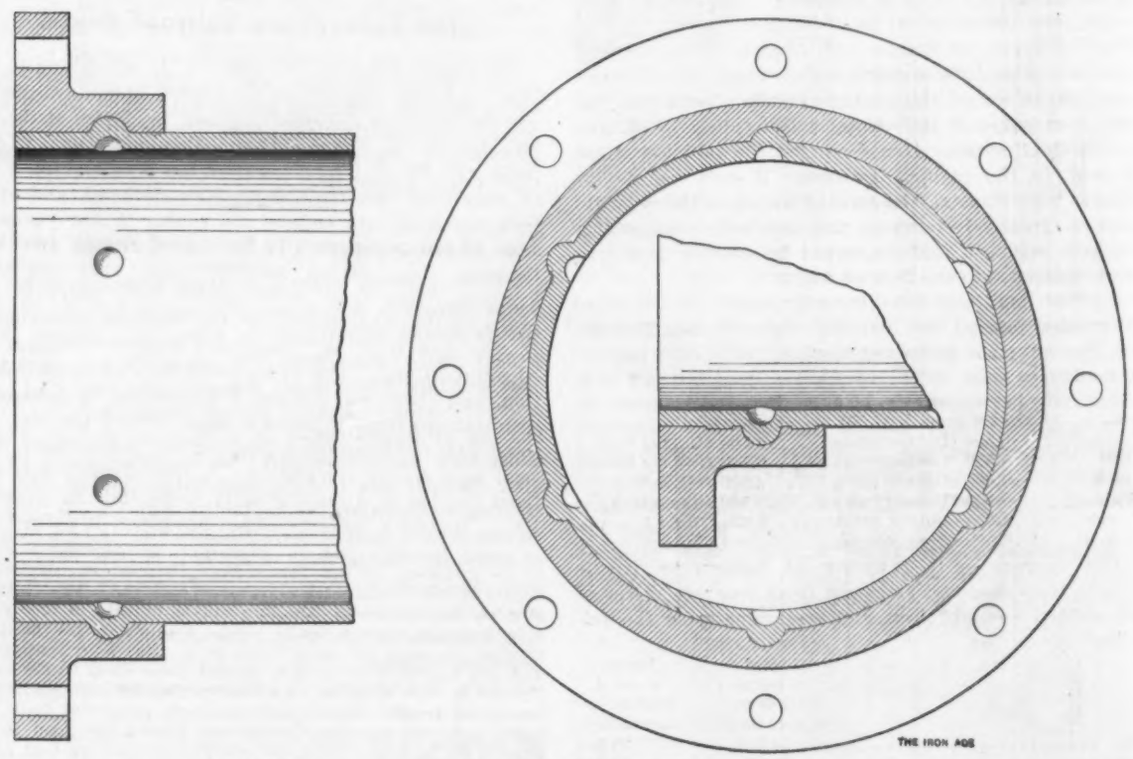
The Tehuantepec National Railroad has been virtually constructed anew by the English contracting firm of S. Pearson

& Son, and the same firm is rapidly pushing the improvement of the terminal ports. The railroad already is in a condition to handle the heaviest traffic and the terminal ports are within measurable distance of completion, which, seeing that the work is now in full swing and is being handled with the greatest energy and efficiency, ought to be a matter of not more than a year.

Sir Weetman Pearson is as sanguine as ever with respect to the advantages which the Tehuantepec rail route possesses over any canal whatsoever. But it is safe to say that, whether or not his optimistic views will be justified by future traffic over the route in competition with a completed Panama canal, he is stimulated in his energetic efforts to finish the work in hand rather by a wholesome spirit of achievement than by enmity to American enterprise. J. J. D.

The Wood Method of Securing Flanges to Pipes.

A patent was recently granted to John Wood, Jr., Conshohocken, Pa., for a novel method of fastening cast iron or steel flanges on wrought iron pipe, intended as an improvement over the older practices of expanding the pipe into the flange or threading both parts. The new process is claimed to be cheaper and quicker than the old processes and produces a wonderfully strong joint.



The Wood Flange Joint.

The first large flange put on by this method, it is stated, was tested up to a pressure of 1175 pounds, when the testing machine broke, but the joint did not leak or the flange move.

The accompanying illustration shows very clearly the principle involved in the new method. The flange is cast with button shaped depressions at equal intervals around its internal circumference, or the recesses may be bored after the flange is cast. These are usually spaced about 6 inches apart, though the pitch depends upon the size of the pipe and the service for which it is intended. The flange is then bored to a diameter slightly less than the outside diameter of the pipe. After the flange has been heated to a cherry red to expand it sufficiently to allow it to be slipped over the pipe it is cooled, forming a tight joint with the pipe. In some cases it is well to calk the joint at the same time to upset the metal of the pipe against the metal of the flange and so compensate for any irregularities in the surface of the pipe. Marks on the flange show the location of the recesses as a guide in the next operation. This consists of forcing the metal of the pipe outward to fill the recesses and may be accomplished in a variety of ways. By hand it may be done with a hammer, or it may be done upon a press or other suitable machine. The finished joint is extremely strong against longitudinal or rotative displacement of the flange.

A modification of the scheme is shown in the detail in the center of the cross sectional view. In this form one or more shallow anular grooves are turned in the inner surface of the flange, so that when the flange is shrunk upon the pipe the shrinkage will force the metal of the pipe into these grooves.

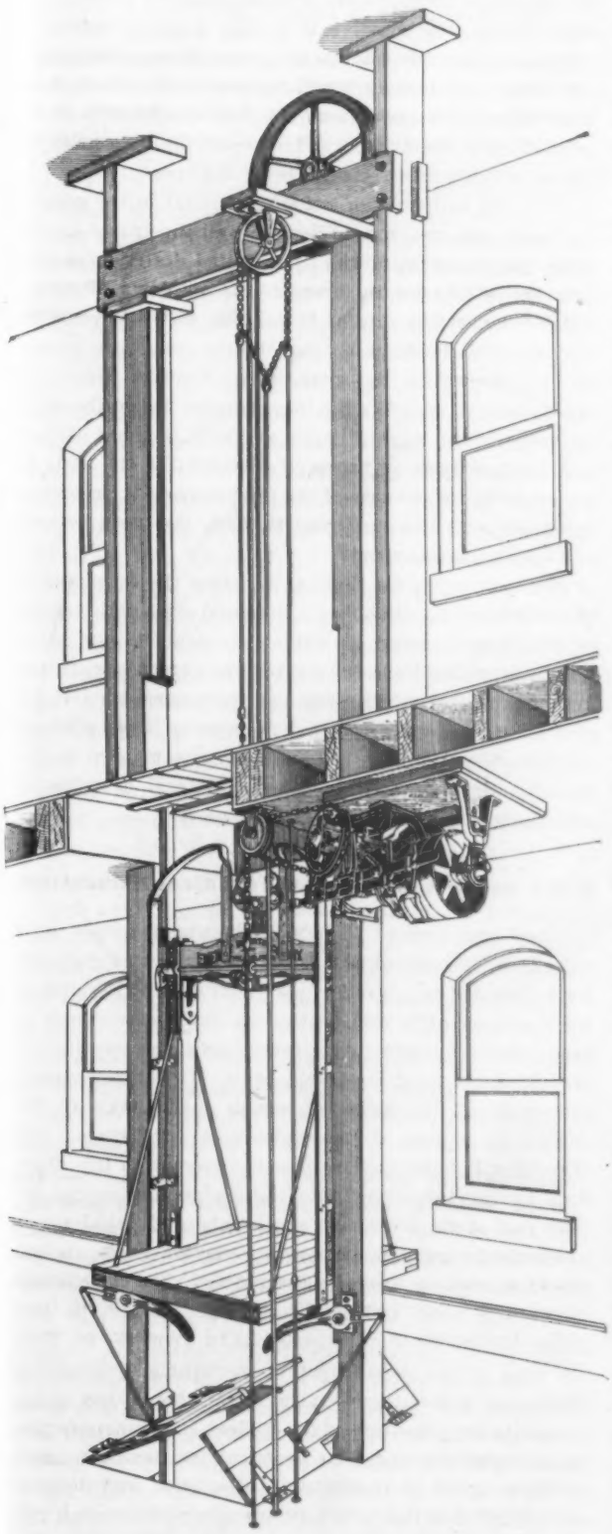
The Westinghouse-Tesla Suit Won.—In pursuance of a decision handed down by him February 20, in the United States Circuit Court for the Eastern District of Wisconsin, sustaining the contention of the Westinghouse Electric & Mfg. Company that the synchronous motors of the National Electric Company were an infringement of the broad rights covered by Tesla patents Nos. 381,968, 381,969, 382,280 and 382,281, Judge Seaman on February 24 enjoined the National Company from the further sale of such motors. The decision in this suit is the first that has been obtained in the litigation begun some time ago by the Westinghouse Company to prevent the sale of synchronous motors and rotary converters by American manufacturers not enjoying a license under the Tesla polyphase motor patents. A decision is now pending in the United States Circuit Court for the Southern District of Ohio in the suit brought by the Westinghouse Company against the Bullock Electric Mfg. Company, alleging similar infringement of the same patent rights in the sale of Bullock synchronous motors and rotary converters. The action instituted by the Westinghouse Company a number of years ago against the Thomson-Houston Company for alleged infringement of the Tesla patents was discontinued upon the execution of a patent agreement under which the General Electric Company has for several years manufactured and sold induction and synchronous motors and rotary converters. A number of manufacturers have been enjoined from manufacturing induction motors, but the decision in the suit against the National Electric Company is the first court ruling that the synchronous motor is within the generic Tesla invention.

A Tidewater Steel Plant.—Rumors have been current for some weeks that Charles M. Schwab of New York has

decided to build blast furnaces and a steel plant at some point on New York harbor. It is understood that a by-product coke plant and the utilization of deposits of foreign ore controlled are conspicuous features of the plans.

The Energy Belt Power Elevator.

The belt power elevator illustrated herewith and built by the Energy Elevator Company, 411 Cherry street, Philadelphia, Pa., is claimed to have features which are



A Belt Power Elevator Manufactured by the Energy Elevator Company, Philadelphia, Pa.

new and of special value in an apparatus of its character, embodying certain improvements, and safety devices. It is driven by two belts, one for hoisting and one for lowering, power being supplied from a line shaft or direct from an electric motor, as illustrated. The belts are shifted and the brake applied in a single movement of the operating cable from any floor. At the top and bottom floors the car is arrested independently of the operating cable by automatic terminal stops mounted on a drum shaft.

The hoisting machinery is compact and of new design. The worm and worm wheel are inclosed in an oil tight case, protecting them from dirt and dust and insuring perfect lubrication. The gears are cut and of a special pattern, giving a maximum wearing surface and consuming a minimum amount of power. In the usual practice of running the driving pulleys directly on the driving shaft at a speed of about 350 revolutions per minute it was found impossible to keep them perfectly lubricated, and the consequent wear occasioned frequent renewals of the shaft. In order to overcome this the manufacturer of this elevator has devised a removable self oiling sleeve, on which the pulleys revolve and which can be removed and replaced with little difficulty when it becomes worn, while the main shaft remains in as good condition after years of service as when new.

The rope drum is accurately turned and spirally grooved by machinery in a manner to avoid undue wear on the cable and thereby extend its life. A slack cable stop shuts off the machine and prevents the cable from slackening or getting out of place on the drum in the event of the car encountering an obstruction in its descent. These elevators are equipped with the usual safety devices, automatic safety hatchways, &c. The accompanying illustration shows the manner of driving the elevator, the automatic hatches and the principle of the elevator's operation.

The Production of Pig Iron in Canada in 1904.

The American Iron and Steel Association has received direct from the manufacturers the statistics of the production of all kinds of pig iron in Canada in the calendar year 1904. They show an increase of 5524 gross tons, or a little over 2 per cent., as compared with 1903, but a decrease of 48,615 tons as compared with 1902.

The total production in 1904 amounted to 270,942 gross tons, against 265,418 tons in 1903, 319,557 tons in 1902, 244,976 tons in 1901 and 86,090 tons in 1900. In the first half of 1904 the production was 120,643 tons, and in the second half it was 150,299 tons, an increase of 29,656 tons. Of the total production in 1904, 251,671 tons were made with coke and 19,271 tons with charcoal. About one-fourth of the total production was basic pig iron—namely, 70,133 tons. The production of Bessemer pig iron, all made in the last half of the year, was 26,016 tons. Spiegeleisen and ferromanganese have not been made since 1899.

The following table gives the total production of all kinds of pig iron (including spiegeleisen and ferromanganese) in Canada from 1894 to 1904. Prior to 1894 the statistics of pig iron production in Canada were not collected by the American Iron and Steel Association:

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1894	44,791	1898	68,755	1902	319,557
1895	37,829	1899	94,077	1903	265,418
1896	60,036	1900	86,090	1904	270,942
1897	53,796	1901	244,976		

The unsold stocks of pig iron in Canada December 31, 1904, amounted to 35,119 tons. On that date Canada had 15 completed blast furnaces, of which 8 were in blast and 7 were idle. Of this total 10 were equipped to use coke for fuel and 5 to use charcoal. In addition 3 coke furnaces were partly erected on December 31, but work on the furnaces had been suspended some time ago.

The largest purchase of recent years by the Baltimore & Ohio Railroad Company has just been authorized. It covers 175 freight locomotives, 35 passenger locomotives, 46 switching locomotives and 10,000 freight cars, the aggregate cost of which will range between $12,000,000 and $13,000,000. The delivery of cars will commence April 1 and it is expected the first locomotive will be delivered in June, all deliveries of cars and locomotives being completed by November 1, 1905.

THE IRON AGE

1855—1905.

New York, Thursday, March 2, 1905.

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.

Raw Materials as the Basis of Capital Valuation.

The projected merger of a number of important Southern iron and coal producers brings up once more in a conspicuous manner the system of putting a valuation on properties of this character based upon the amount of iron and coal property controlled. The capitalization of natural mineral resources is a subject on which financiers, captains of industry, engineers, investors and speculators will hold widely divergent views. It is one thing to mortgage the future and quite another thing to value property at its earning capacity, pure and simple. One point of view may appeal to the holder of an industrial bond, while the other is the one which the purchaser of common stock alone will regard.

If the possession of one mineral deposit or of a group of them confers a monopoly, its valuation will be determined by considerations which are radically different from those influencing the appraisal of raw material in the ground whose possessor must compete with the owners of adjacent or distant deposits. In fact, it may happen and it does occur that such competition may suddenly arise in some distant part of the globe. The Lake Superior miners of copper may be deeply affected by the discovery of great deposits in South Africa. In fact, they were so affected by the outpouring of enormous quantities of very rich ore from Butte in the early days of that camp, the history of the copper industry affording a number of such instances. Or, to cite a case nearer to the steel industry, we may recall the effect on the Eastern iron makers and on the iron producers of the world which followed the flood of cheap iron ores from the Mesaba range. The risk of new discoveries is one which established owners of mineral property always run, just as industrial works always are subject to the chances that inventions impair or even destroy capital invested in plants thus rendered obsolete.

The acquisition of a monopoly of the mineral resources of a country, or of the world, is out of the question in coal and remote in the case of iron ore and may therefore be dismissed. The acquisition of a control of the best and most favorably located deposits from an economic point of view is another matter, and is within the reach of ambitious captains of industry. They may figure, for instance, that the ownership of the Lake Superior iron ore mines is equivalent to so many dollars a ton on steel under the cost of producers drawing their supply of raw material from other sources. That is safer, but still it has elements of danger. Technical progress may render natural advantages less important. It is necessary only to recall the effect of the basic process upon the monopoly of Bessemer ore, or the development of the by-product coke oven upon the apparently impregnable position of the "coking" coal of the days of the bee-hive oven.

Risks like these should find their expression in some discount of the capitalization of mineral deposits, but, after all, the cardinal point is whether and to what extent it is wise to incur interest obligations for the supply of raw materials for very long periods of time, to load down current product with fixed charges to insure a distant future or to keep at bay competition threatened within a measurably close period of time. That such a course may be fatal history in our country has eloquently taught. Franklin B. Gowen broke the back of the prosperous Philadelphia & Reading Railroad by attempting to control the anthracite tonnage tributary to it by the purchase of collieries and undeveloped lands. The interest charge on the purchase price on property which must long remain unproductive is a very heavy, cumulative burden, particularly when it is imposed upon manufacturing plant, which must itself be practically renewed at least twice in a generation. It doubles the cost in an astonishingly short time and exposes the enterprise to the serious embarrassment of being land poor.

How the estimates of value of mineral in the ground for future use run into millions is well illustrated by the figure put on the holdings of the United States Steel Corporation by Charles M. Schwab. He set down $700,000,000 for ore, at the rate of $1 per ton, and it is reported that the Hill holdings on the Mesaba range are valued by their owners on the same basis. Some of those who are connected with the Southern merger figure the capital value of the mineral lands at about 10 cents per ton and reach a figure in excess of $200,000,000, the basis of the appraisal in the case of the most important properties being the very thorough reports made last year by able and conscientious experts.

We have no doubt that in each case the estimates of quantities are as reliable as a close and systematic testing of the ground, based on extensive openings, can make them. But the interest charges on current or future output of metal which such capitalizations involve are somewhat staggering, and they necessarily imply a forced utilization which may become a serious menace to the industry itself and to the many collateral branches of manufacture which must depend upon it.

Costs as an Element in Technical Education.

Costs and kindred factors in shop management have come to be recognized as a legitimate branch of engineering knowledge and practice. Without a correct system of costs and scientific and continuous study of methods of production a manufacturing establishment cannot be conducted on its most profitable basis. It is consequently quite natural that technical schools should take up this subject as a part of the engineering curriculum. The Worcester Polytechnic Institute is a pioneer in this direction, having introduced into the engineering course the office end of its Washburn shops, where the students in mechanical engineering receive instruction in the various branches of shop work, in the pattern shop, blacksmith shop, forge shop and machine shop. So far the new course is considered an experiment by Prof. W. W. Bird, the head of the department of mechanical engineering. The theory is that the office end of the shop is just as important to the education of the student as the manufacturing departments, and that practical instruction in shop management is as conducive to discipline and development of mind as instruction in any other department, perhaps excepting the class room.

The fundamental purpose of shop practice is to give to the student a correct idea of the theory of manufacture, and in order to acquire properly that theory it is necessary that he do a certain amount of the work himself. In his professional career he will have to do with management, where the products of shop and foundry play

important parts. As an engineer he must have more than a theoretical idea of such things, or perhaps it would be better to say that a correct theory must have a practical basis. Consequently, in the modern polytechnic institute the student makes his patterns and molds and pours his castings; learns the proper mixtures for the cupola; works his castings in the machine shop and fashions other metals with machine tools. But he is not expected to become the equal of a journeyman in any trade. Included with this training of the hands is a material training of the mind. All contribute to the mental training, the discipline, which makes of the student the well balanced, highly trained engineer. Nowadays the office end of the business is so very important a factor in the shop itself, especially as work is directed to produce the maximum of economy and efficiency, that it would seem to be imperative that the student of the polytechnic be given a certain amount of that end of engineering.

The senior class at the Worcester Polytechnic Institute was selected as the best equipped from experience to master the principles of costs and shop economies. The course is divided into three parts, in a general way. First, the students were put to work preparing a set of instruction cards for the use of the apprentices, of which the shop has a few. The result was excellent. The task was divided up among the students so that each might specialize on a given piece or part. They went into the shop and made a systematic and accurate study of the work being done. The stop watch played an important part. The exact time required for each given operation was ascertained, and wherever it was seen that time could be saved by a better method or by getting more work out of a machine it was done. The journeymen employed in the shop first laughed at the work and then felt the stimulus. The whole shop was speeded up. The standard of time which shop custom had set for certain work was found to be completely astray. And all the time the students were learning a great deal about a very important part of industrial management, for modern conditions require just this sort of investigation to bring about a satisfactory margin of profit.

The next part of the course was in the keeping of costs. A standard machine built in the shop and exhibited at St. Louis had to be taken apart for cleaning, and the opportunity was taken to make of it the lesson in costs. The parts of the machine were laid out and divided among the members of the class, each being given one or more pieces and being held responsible. As it is a machine that goes through the shop in lots of 25, the lesson was a good one. The final result was the cost of the entire lot as well as of each operation of each piece. The student received all job tickets having to do with operations on his particular share of the machine. He had to work out the cost from these tickets and to reckon the cost for the next lot of machines. It will readily be seen that many perplexing questions arose for him to master. He learned the lesson of buying, the intricacies of discount sheets. He became acquainted with the economies, at times, of producing pieces in greater numbers than the machine lot calls for, in the economical cutting up of stocks, and many other practical things. In addition to the discipline of study he profited by the observation of the evil results of lack of discipline, for he came in contact with the personal equation of the workman, with its possibilities of waste and delay. The third part of the course, yet to come, is in buying and selling, including both foreign and domestic shipments.

This course will be criticised by some of those having to do with technical education, on the ground that it is squandering time on the practical side which would be better devoted to the theoretical. Compared to the shop courses of most technical schools, the course at Worcester is practical. What is manufactured by the students is intended for the market. This is the growing tendency of similar institutions, and one in which the manufacturer who employs technical school graduates will heartily sympathize. He wants the solid basis of theory, but he also wants enough of the practical so that the young man fresh from the polytechnic will not have to begin all over again and learn a new lesson at the cost of the time of his employer. There is a happy medium between too much theory and too much practical. In the work of this course in shop management the student gets the same sort of discipline and mental stimulus that he receives from other branches of shop and laboratory work. It is an experiment that will be watched with more than ordinary interest by those whose profession it is to train young men for engineering professions, as well as by those who employ the young men after they have taken their degrees.

The Reading of Technical Papers.

The demand for technical papers in the reading rooms of public libraries has increased very much during the past few years. Many librarians have realized the fact and have encouraged it by the addition of more standard publications, including those of other countries and some in foreign languages, which are read much more than would be expected at first thought. In a few instances, in the larger cities, separate reading rooms have been established for this class of periodical.

A study of those who use the technical journals reveals interesting conditions as to the class of people who accept the opportunity offered them. Some are engineers by profession who wish to keep up with the times by the systematic reading of the latest ideas in their lines. But the majority of the readers have not had the advantages of the higher education and are mostly young men from the shop. They read deeply and apparently with understanding. It is with them no cursory glancing through the pages. Many articles are beyond them, because of the ultra-technical vernacular or mathematical discussion which may require as a basis of understanding a liberal education. But, excepting such articles, the intelligent and interested young mechanic or draftsman gets pretty nearly the meaning of discussions and descriptions and profits much by them. Take, for example, the evening when a new issue of *The Iron Age* is placed upon the reading room table; one must be an early comer to get it, for there are those who make it a practice to be on hand for that particular event. They all know when their favorite journals are due. The result is, at the end of the week, when the next issue arrives, it succeeds one well thumb marked and well read.

In some instances librarians appear to have overlooked this important class of literature and a reading room completely stocked with magazines has only a small quota of technical journals. They are missed by a great many people, and many more would miss them had they ever had the advantage of a properly balanced reading room. The educational result of such reading to young men cannot be overestimated. It is in a sense a technical education itself, and, which is very important, is a constant source of stimulation and even inspiration. If a man reads the literature of his profession or trade he does not get into a rut from which, later on, it will be difficult for him to escape. It is, like travel, broadening as well as educating. Some manufacturers have realized

this and have provided reading rooms where their employees have access to the technical and trade papers, knowing that good results must follow.

Gray Iron Castings in More Restricted Use.

While every other iron industry in the country is fully employed, the jobbing foundry trade is quiet. All sorts of reasons have been named for this state of affairs, and until recently the railroads were blamed for withholding their usual business. The fact develops, however, that the railroads and makers of railroad specialties are today very large buyers of castings, but that their orders are going to the malleable iron founders and to the steel castings makers rather than to the gray iron foundries. In Chicago, for instance, the malleable iron foundries are literally swamped with work and the steel foundries and makers of "semisteel" are almost equally busy. These industries have become very large buyers of pig iron, and during the last few weeks nearly all of them have had to increase their orders for pig iron from 20 to 50 per cent. These large plants, by the use of improved methods and appliances, have reduced the cost of manufacture of their product to a point where malleables are sold at about $5 a ton above the quotations on gray iron castings. It is even said, and no doubt truthfully, that the large malleable iron works can turn out castings in quantities, by machinery, at a lower price than the same castings could be made for in gray iron by the ordinary hand labor jobbing foundry. The greater strength and durability of malleable castings and steel castings, as compared with gray iron, have commended their use to railroad, marine, farm machinery and other large industries, and now that their cost is brought down close to that of gray iron the gray iron foundry is finding narrower and narrower limits for its product.

Large users of iron and steel who depend on mill shipment will do well to anticipate their early spring requirements. Steel works and blast furnaces in Pennsylvania and Ohio are nearly all situated on banks of rivers which drain areas that are now buried under a snow blanket ranging from 6 to 18 inches deep. While it is hoped that this precipitation may disappear gradually without serious floods, there is grave danger that such may not be the case. With mills and furnaces already behind their orders and available merchant stocks none too great, it would seem to be the part of wisdom for the consuming trade to lay in stocks against a possible curtailment of supply by spring floods.

The expense of maintaining in commission one ship of each of the classes represented in the United States Navy is given in a recent statement. In round figures the results are: First-class battle ship Maine, $538,000; second-class battle ship Texas, $390,000; armored cruiser New York, $507,000; protected cruiser Olympia, $405,000; monitor Nevada, $140,000; gunboat Bennington, $179,000; gunboat Machias, $118,000; gunboat Annapolis, $128,000; torpedo boat destroyer Lawrence, $80,000; torpedo boat Dahlgren, $41,000, and submarine Holland, $11,250. These figures represent the pay of men and officers, the cost of provisions and supplies of all sorts, coal and the many supplies of the engineering department, ordinary repairs and practice ammunition.

The New York Central Railroad, it is stated, contemplates replacing the bridge across the Connecticut River at Springfield, on its Boston & Albany division. It will be a two-span double track bridge.

CORRESPONDENCE.

The Wisconsin State Capital.

To the Editor: In the last issue of *The Iron Age* we note the statement relative to the Wisconsin State capital, and at the end of the article you say there seems to be considerable dissatisfaction with the location. We beg to take issue with you on this proposition, as, viewing it from an impartial standpoint, we can truthfully say that there is hardly any dissatisfaction, except an occasional remark dropped by some member of the Legislature who is prejudiced. We will further emphatically say, from a personal acquaintance with the situation, that there is very little dissatisfaction with the present location. GISHOLT MACHINE COMPANY.

MADISON, WIS., February 24, 1905.

Employers' Liability Legislation Proposed by Labor Unions

To the Editor: A bill of wide importance, relating to the liability of employers for injury sustained by employees while engaged in the duties of their occupation, is soon to be introduced in the State Legislature of Illinois at Springfield. According to reports the measure is now in the hands of President Barney Cohen of the Illinois State Federation of Labor, who is under instructions from the labor organizations of the State to have it presented at the earliest possible date. Emanating as it does from the labor bodies it will of course have their united support, and it is understood they are are arranging to bring strong influence to bear to secure its passage.

The bill, which is known as the "Investigating bill," has for its specific purpose the compulsory provision of means and opportunity for full and free investigation of accidents resulting in personal injury or death of employees, with a view to facilitating the gathering of competent evidence and testimony in their behalf in personal damage suits. Should the bill become a law it will effectually open the way for unrestricted investigation on the part of complainants or their authorized representatives, and will therefore have an important bearing on all such litigation. The bill as drafted reads as follows:

Section 1. Be it enacted by the people of the State of Illinois represented in the General Assembly, That every corporation, company or individual who may employ agents, servants or employees shall permit the attorney or other representatives of any such agent, servant or employee who may have been injured or killed while in the discharge of his duty as such agent, servant or employee to enter upon the premises and inspect the place where such accident occurred, and any ways, works, machinery, tools or other appliances which may have been connected with such accident or injury, for the purpose of investigating the cause of such accident or injury, and shall permit the interviewing upon such premises of witnesses or other employees of such employer who may be familiar with the circumstances of such accident or injury, and shall also permit the making of any sketch or photograph under the direction of such attorney or representatives of the place where such accident or injury occurred, or the ways, works, machinery, tools or other appliances connected therewith: Provided, that such representatives shall show to such employer or his agent written authority to make such investigation, signed before or after the accident of such person or his parent or dependent relative or executive officer of his labor union, or, in case of death, by the administrator of the estate or near relative of the deceased or an executive officer of the labor union to which the deceased belonged.

Sec. 2. In case any corporation, company or individual shall violate all or any of the provisions of the foregoing section and a suit for damages for causing such injury or death of such agent, servant or employee shall have been properly commenced against such corporation, company or individual, it shall be competent to introduce in evidence at the trial of such suit in lieu of other proof of negligence, proof of such violation of this act, and such proof shall constitute a prima facie case of negligence such as shall entitle the plaintiff in such case to recover such damages as shall be legally awarded for such injury or death.

A significant and drastic feature of the proposed bill is that contained in the provision of Section 2, which makes proof of the violation of provisions in Section 1 by the defendant conclusive evidence of negligence, upon which a verdict for the recovery of damages shall be legally awarded. The penalizing effect of this clause if put in execution would make any action of an employe obstructive of investigation clearly impossible. That the bill will meet with opposition from employers, organized or otherwise, is most certain, and it is equally sure to

be strongly championed by the labor interests of the State. It is worthy of notice that whatever benefits are conferred by the measure are, by the terms "agents, servants or employees," strictly limited to wage earners as a class. Actionable cases involving public liability are not included within the scope of its provisions, a fact that on grounds of class legislation might render its constitutionality questionable. The progress of the bill when introduced will be watched with much interest by employers, employees and the underwriters of liability insurance. T. J. W.

CHICAGO, February 25, 1905.

The Gayley Dry Air Blast.

There has just been received Volume II of the 1904 Transactions of the Iron and Steel Institute, in which the paper of James Gayley on the "Application of Dry Air Blast to the Manufacture of Iron" is printed, together with the oral and written discussion. In his reply to the discussion Mr. Gayley touches upon some of the more salient points and also gives some interesting later data. We take from this latest contribution to the subject the following:

It has transpired that certain statements made in the paper have been misunderstood, and I take this opportunity to shed further light, if possible, on some of them. First, with regard to the density of the blast: Some erroneous calculations might be made from the data showing the air entering the refrigerating chamber at about 80 degrees and leaving it at about 25 degrees, since the dry air in passing through the main from the refrigerator to the blowing engines is increased in temperature to 35 degrees F. From a careful indicating of the engines it has been found that there is 8.2 per cent. less weight of air entering the furnace than has been used prior to the introduction of the dry blast. Next, with regard to the moisture contained in the atmosphere: It has been assumed to be a matter of common knowledge that the moisture in the air is contained as aqueous vapor, and when passed through the stoves becomes superheated steam, and whether the moisture entering the furnace as superheated steam with the blast, or as water from a leaking tuyere which is at once converted into superheated steam, it is nevertheless a form of water, and that it must be dissociated by the fuel and heat absorbed; but inasmuch as there is superheated steam to deal with at one end of the process, and frost or snow at the other end, it has been deemed preferable, as stated in the beginning of the paper, to represent the moisture contained in the atmosphere as grains of water per cubic foot of air.

In the paper presented to the institute I have simply given the results obtained by the use of dry air, and without any intention of claiming that the economy of fuel is represented entirely by the weight of moisture eliminated. It would require a very simple calculation to show that it is not. The calculations covering a period of operation show that the saving directly due to the removal of moisture represents 24 per cent. of the total fuel saved. But a far greater economy is effected in the use of the dry blast, and is represented by the reduction in temperature of the escaping gases and the greater efficiency in the reducing gases, as shown by the increase in percentage of carbonic anhydride. These items alone account for one-half of the saving in coke. In addition to the items already mentioned there is a material saving through the increased temperature of the hot blast, a lowering of silicon in the metal and in a similar amount of slag to be melted, as less coke is required per ton of iron.

The moisture charged into the furnace through the raw material is many times greater than would enter the furnace from the atmosphere; but to get rid of it through simple evaporation by gases which have already performed their useful work is quite a different proposition from that of dissociating the quantity of moisture carried in from the atmosphere into the hearth of the furnace, where temperature is such a vital element.

During the month of December there was an excellent opportunity of noting the results obtained by the use of dry blast, as Nos. 1 and 3 furnaces at the Isabella plant (No. 2 furnace having been out of blast) were making the same grade of iron. These furnaces were nearly the same size, No. 3 being a little larger. The same ore mixture and fuel were used in each furnace, and the conditions under which they were operated were identical. No. 1 furnace was blown with dry blast containing one grain of moisture per cubic foot of air, while No. 3 furnace used natural air, which, being drawn from the engine room, contained from two to four grains of moisture. Although this period represented the best conditions as to dryness of the air in that climate, and furnaces under ordinary conditions increased decidedly in output above the average, yet the results obtained from a small and uniform content of moisture in the dried air supplied to the blowing engines in contrast with the varying content in the atmosphere were very striking.

From December 1 to 22, inclusive, the results were as follows:

	No. 1 Furnace, dryblast.	No. 3 furnace.
Average daily product	449 tons.	400 tons.
Average coke consumption	1,858 pounds.	2,309 pounds.

As connections had been made to the dry blast main for four blowing engines, and as only three had been used on No. 1 furnace, it was decided to connect the fourth engine to the main and supply No. 3 furnace with one-third dry blast. This was done on December 23, and it was decided not to make any increase in the burden or to change the revolutions of the blowing engines in order to see what effect the use of approximately one-third dry air would have on the output of iron. The furnace immediately began to drive faster, and the average daily product from December 23 to 31, inclusive, was 461 tons, an increase of 61 tons per day.

The increased efficiency of the furnace can be directed, in the main, to either increased output or to economy of fuel, according to the location of the works and as the commercial problems suggest.

The drying of the blast finds, to some extent, its equivalent in an increase of temperature in the hot blast which is wholly available, as the removal of the moisture represents a calorific gain in the furnace hearth proportionate to the quantity of moisture removed; but the dry blast provides uniformity, which the hot blast does not provide.

Another Bessemer Steel Plant at Youngstown.

The Youngstown Iron Sheet & Tube Company, operating skelp, pipe, tube and sheet mills at Youngstown, Ohio, has for some time been considering the advisability of building a Bessemer steel plant at Youngstown, and has about decided to erect a Bessemer plant to contain two 10-ton converters, blooming mill and other equipment. The company is a consumer of steel to the extent of 300 to 400 tons a day, all of which is bought in the open market. There is also a heavy natural demand in the Youngstown district for billets and sheet bars, there being two large sheet mills at Niles, one operated by the Niles Iron & Sheet Company and the other by the Empire Iron & Steel Company, while at Youngstown is the Youngstown Iron & Steel Roofing Company, also a heavy consumer of sheet bars. These three companies, with the Youngstown Iron Sheet & Tube Company, would probably be able to take 800 to 1000 tons of steel per day.

A number of directors in the Youngstown Iron Sheet & Tube Company are interested in blast furnaces in the Youngstown district and the greater part of the pig iron needed for the Bessemer plant will come from their furnaces. The company itself owns Alice Furnace at Sharpsville, Pa., which has a daily capacity of about 250 tons. The enterprise is well equipped in the matter of ore and coke supply, as a number of blast furnaces of which the directors are owners control ore and coke properties which will insure to the combined interests a full supply of ore and coke and at lowest prices.

While definite plans for the building of this Bessemer steel plant have not been made, there is every probability

that it will go through and work started at an early date. The Youngstown Iron Sheet & Tube Company has been very progressively managed from its inception, and is at present adding large skelp and pipe mills to its plant which will considerably increase its output in these lines.

The Buffalo Foundrymen's Association.

The regular monthly meeting of the Buffalo Foundrymen's Association was held in its headquarters in the Builder's Exchange, on Tuesday evening, February 21. President Lyman P. Hubbell occupied the chair, and 26 members and several visitors were in attendance. After the regular business was disposed of N. W. Shed, consulting metallurgist, associated with the Buffalo Foundry Company and other large foundry interests of the vicinity, read a paper on "The Value of Chemistry in Foundry Practice," which was highly appreciated by every one present. A vote of thanks was tendered Mr. Shed, an abstract of whose paper follows:

"When we know that two or three grades of iron can be distinguished on a single pig; when we know that a No. 3 grade can be transformed into a No. 2 grade by slower cooling; when we know that iron cast in a dry pig bed is a lower number than iron cast in a wet pig bed, we can form some idea of the difficulty of grading by fracture. But this gentle handling of iron by number and by tradition is unknown to the mixer by analysis. The chemist ruthlessly cuts into the iron with two acids, separates the graphite, silicon, sulphur, phosphorus and manganese, and marshals them into columns, and now the mixing is simply a pairing off of these substances: A high silicon with a high phosphorus. A low silicon with a low phosphorus. A high manganese with low sulphur. A high manganese to carry off sulphur. Low silicon and low phosphorus for strength. High silicon and high phosphorus for softness. A low silicon and high manganese for close grain. Nothing is left to guess. A formula is decided upon and the various irons are figured to so mix that the result shall not vary over one-tenth of a per cent.

"The old method was certainly more picturesque, but the modern method is certainly more sure. There are foundrymen here who will admit that mixing can be done better by analysis, but they say the blast furnace people make the analysis of every carload of pig, and that is good enough for them.

"This may do in making the softer grades of iron, but when it comes to making hard iron the furnace analysis is seldom reliable. The fact is the analysis given of the carload is not an analysis of the pig in that car; it is simply an analysis of the cast from which that car was loaded. As one cast of iron may vary from 10 to 60 in silicon, it is easy to see that a man may get a carload of iron of which the furnace analysis is 1.50 but the actual analysis is 1 silicon. If he goes on the supposition that the furnace analysis is right, he will get white iron if he uses any hard scrap, and he will probably get all his light castings white if he uses nothing but pig.

"Another disadvantage of relying on the blast furnace is that the furnace people will claim that the only satisfactory iron is supplied by them. The claim is often made that the ores, limestone and even air used by them have a marvelous power to give both strength and softness to the iron, while ores and air of a rival furnace have no such power. If this claim is admitted by the foundryman he is at the mercy of the pig iron maker, and the blast furnace fairly owns the foundry. This shuts out the foundry from the open market when prices are much lower. If the foundryman is free to buy he can often pick up lots of off malleable or off basic iron which he can use to advantage. In the same way many lots of scrap $2 to $4 below the price of pig may be picked up and the right pig bought to go with it.

"But the great value of the chemist to the foundry is in the making of special irons. Some castings must be very strong; some must resist corrosion by acids or alkalies; some must expand and contract with sudden change of temperature. This requires a careful balancing of the different elements in the irons, and in many cases the correct amount of manganese will solve the problem.

"A special iron much heard of lately is semisteel. The name is a poor one, but like many other poor names it seems to stick. It is practically not steel at all. It is simply a cast iron strengthened by melting steel with it. It generally gives a foundryman a creepy feeling to melt steel with pig iron, but when he gets up his courage he finds the metal clean, close grained and strong and not a bad imitation of air furnace iron.

"Semisteel should have a definite composition, and its real value is in the low graphite. The plates of graphite scattered through cast iron tend to weaken it, and if the amount of graphite is lessened the iron becomes stronger.

"But the coke sampling is the most important. Many cokes are sold with 1½ to 2 per cent. sulphur. This means a moderately low silicon and white iron castings. Sulphur should not go above 0.75 per cent. in coke. Many foundrymen find out that the coke is poor after they have made two heats of white castings; then they test the coke. This is much like locking the door after the horse is stolen."

Notes from Great Britain.

The Market.

LONDON, February 17, 1905.—In the Midlands trade has settled down into a sort of comfortable quietude. There was a slight inflation at the beginning of the year, and this has brought with it a slight reaction. More weakness has developed than was anticipated. Nominally, pig iron is quoted at last week's level, but with very little disposition to buy these prices are weak and for prompt delivery buyers expect to obtain concessions. The weak point is the quietness which prevails in finished iron. Black sheets have also lost some of the strength which characterized them during the latter part of last year. The weakness in the consuming branches is being felt by makers of steel billets and sheet bars. Although large quantities have been sold deliveries have fallen off considerably.

Judging by the good demand for coke in Sheffield, the crucible steel department shows signs of revival. For best qualities of steel melting coke 23 shillings a ton, delivered, is obtained. As showing how far Sheffield trade is behind what it was during the boom period of three or four years ago, it may be mentioned that steel melting coke was then selling at 26 and 27 shillings a ton. The market for blast furnace coke has considerably improved lately. During the past year the price went as low as 9 shillings at the pits, but now from 10 to 11 shillings is being realized. As the new contracts do not come into operation until April 1, the increased price is a cheering sign. Iron makers would not have accepted an advance so far ahead unless they had strong expectations of a better trade.

It would seem that matters are mending on the northeast coast. The monthly report of the Boilermakers' and Iron and Steel Shipbuilders' Society shows a great falling off in the number of the unemployed on the northeast coast, and the prospects of good trade are described as very much brighter than the most optimistic anticipated a few weeks ago.

To Be Scrapped.

Another iron works on the north side of the Derwent is to be scrapped, the Lowther Iron Works at Workington having been purchased by T. W. Ward of Sheffield for that purpose. The Northwestern Works at Workington is already in course of demolition by Byrons, Hague & Hargreaves. The Lowther Iron Works, which manufactures pig iron, has been idle for several years. T. W. Ward also purchased, some time ago, the Lonsdale Iron Works at Whitehaven, and this is being demolished.

Big Locomotive Contracts.

A contract for the early delivery of 46 heavy compound locomotives for the Buenos Ayres Great Southern Railway has, in face of severe competition, been awarded to Beyer, Peacock & Co., Limited, of the Gorton Foundry, Manchester, who, in addition to now being engaged on the completion of 31 locomotives for the East Indian State railways, have just secured the further or-

der for six powerful freight locomotives for the Buenos Ayres Western Railway. The Japanese Government has placed an urgent order with the North British Locomotive Combine, Glasgow, for 50 locomotives.

The Troubles in the Tube Trade.

The rupture of the working agreement between the Wilsons and Union Tube Company and Stewarts & Lloyds, the two largest firms in the tube trade, has brought about a state of affairs which threatens to have serious results if allowed to continue unchecked. A war of prices has been entered upon and is being prosecuted with extreme bitterness, quotations in the trade being yesterday reported as the lowest on record. Contrary to general expectations, no effort has been made to draw up a new working agreement.

Employment Last Month.

As compared with a year ago, employment in most trades showed some improvement in January, especially the cotton, woolen, pig iron, tin plate and iron and steel industries. In the 270 trade unions, with an aggregate membership of 578,910, making returns, 39,315 (or 6.8 per cent.) were reported as unemployed at the end of January, 1905, as compared with 7.6 per cent. in December, 1904, and 6.7 per cent. at the end of January, 1904. Employment in the coal mining industry was fairly good on the whole, and slightly better than a month and a year ago. Employment in the iron and steel industry was much better than a year ago. The principal changes in wages reported were decreases affecting 35,000 coal miners in Northumberland, 20,000 ironworkers in the Midlands and over 4000 iron and steel workers in the North of England.

The Cunarder Trials.

Now that the results of the trials of the Caronia, the new Cunarder, have been carefully collated, it is possible to sum them up, and there can be no question of their satisfactory nature. The speed condition required is 18 knots on the Atlantic passage with a normal load, and it was considered sufficient to stipulate that 19 knots should be realized on the measured mile and maintained subsequently on a long distance sea run. The mean speed on four runs on the measured mile was 19.62 knots, attained with the engines making an average of 89.2 revolutions and indicating 21,870 horse-power. Following these runs the vessel proceeded to sea, and the same power and revolutions were continued for 13½ hours, when the officials of the Cunard line expressed themselves satisfied. Indicator cards were taken at several intervals during the trip, and the highest power recorded was 23,500 indicated horse-power. There is therefore every prospect of the Caronia doing well on her Atlantic steaming.

There was on board a new instrument which accurately records the horizontal as well as the vertical vibration of the ship, and the results prove that this had been reduced to a minimum by the perfect balancing of the engines. The records of the vibration will be most instructive when compared with the similar diagrams got from the turbine driven sister ship Carmania.

S. G. H.

PERSONAL.

B. L. Keen, for a number of years with J. B. & J. M. Cornell, New York, is now filling the position of superintendent of the Stirling Company, National Department, Barberton, Ohio, turning out rock crushing, road making and well drilling machinery.

H. J. Stambaugh, formerly of the Falls Rivet & Machine Company, Cuyahoga Falls, Ohio, has resigned to become secretary and treasurer of the William Tod Company, Youngstown, Ohio, to succeed S. L. Paul Jones as treasurer, who retires after serving continuously for 27 years in this capacity.

W. B. Schiller, president of the National Tube Company, Pittsburgh, has presented the public library at Lorain, Ohio, with a large collection of new books bearing on technical subjects, selected wtih special reference to the industries at Lorain.

Matthew Carey recently completed 25 years in the employ of the H. A. Rogers Company, railroad and machinists' supplies, 19 John street, New York. The occasion was remembered by the company, which presented him with a silver purse with plenty of gold in it.

The American Steel Foundries has appointed Robert P. Lamont district manager, in charge of works for the Chicago district, with headquarters at Indiana Harbor, Ind., to succeed R. E. Janney, resigned to become manager of the coupler department.

J. B. Nau, consulting engineer, of New York, has returned from a professional trip to Europe made in the interests of a leading Southern iron producer.

Thomas Carlin's Sons Company, Allegheny, Pa., announces that Wm. C. Scott, formerly secretary and treasurer, is no longer connected with the company. Thomas McBride has been elected secretary and will also perform the duties of treasurer, pending the election of a treasurer by the directory.

James S. Stirling, widely known in foundry circles, has been elected president of the Crescent Shipbuilding Company and of the S. L. Moore & Sons Corporation, subsidiary companies of the Bethlehem Steel Corporation at Elizabeth, N. J.

George F. McKay, traffic manager of the Lackawanna Steel Company, has been appointed traffic manager of the Cornwall & Lebanon Railroad, one of the properties of the Lackawanna Steel Company.

Gustav Vintschger of Markt & Co., New York, has been elected a director of the New York National Exchange Bank.

G. W. Heth, formerly general manager of the Warren Steel Company, Warren, Ill., has severed his connection with that company and removed to Chicago.

Edgar N. Dickson has resigned his position as office manager and general purchasing agent of the Allis-Chalmers Company, Milwaukee, Wis., and will become associated with the Milwaukee Coke & Gas Company.

The Emperor of Germany has conferred upon Hugo Reisinger of New York the order of the Royal Crown in recognition of his services to Germany as Honorary Commissioner to the St. Louis Exposition.

W. M. Mills, lately with the Standard Lighting Company division of the American Stove Company, has become associated with the White Tool & Supply Company, Cleveland, Ohio, as its vice-president and general manager.

W. B. Sandford, superintendent of the pipe mill and of the coupling department of the Western Tube Company, Kewanee, Ill., and W. E. Sandford, his son, snperintendent of the galvanizing department and assistant superintendent of the pipe mill of the same company, have resigned their positions to become superintendent and assistant superintendent respectively of the Mark Mfg. Company's pipe mill at Zanesville, Ohio.

W. H. B. Ward has resigned as superintendent of the Struthers plant of the American Sheet & Tin Plate Company, at Struthers, Ohio.

Julian Kennedy, the well-known consulting engineer, of Pittsburgh, has been appointed on the Board of Trustees of the Carnegie Institute.

A. A. Corey, who some time ago took charge of the open hearth department at the North Works of the Carnegie Steel Company, at Sharon, Pa., has been made suprintendent of the blooming and finishing mills. David Christy, whom Mr. Corey succeeds, has been transferred to the South Sharon plant of the company.

Albert F. Nathan, late examiner in the United States Patent Office, has associated himself with Fred. B. Fetherstonbaugh of Toronto in the firm of Fetherstonbaugh & Nathan, attorneys at law and solicitors of patents. They have opened an office at 132 Nassau street, New York. Mr. Nathan is a graduate of the Massachusetts Institute of Technology and was formerly metallurgical chemist of the Argentine smelter of the American Smelting & Refining Company.

B. F. Fackenthal, Jr., of Easton, Pa., president of the Thomas Iron Company, is in Florida.

OBITUARY.

EDWARD COOPER.

Edward Cooper, iron and steel manufacturer, philanthropist and scientist, died from apoplexy February 25, after a week's illness, at his home in this city, in his eighty-first year. He was the only son of Peter Cooper and followed in his father's footsteps in working for the upbuilding of his fellow men. Born in this city October 26, 1824, almost his entire life was devoted to the best interests of the place of his nativity. He was partly educated in the public schools and partly at Columbia College, although he did not finish the collegiate course. Nevertheless he kept up his studies, taking special interest in everything pertaining to engineering.

In his college days Mr. Cooper formed a close friendship with the late Abram S. Hewitt and they began their life work together, engaging in business in 1844 under the firm name of Cooper, Hewitt & Co. Mr. Cooper's knowledge and industry contributed largely to the success of the Trenton Iron Works and the New Jersey Iron & Steel Works, both at Trenton, N. J. He became known as one of the leading ironmasters of the country, and his scientific attainments gave him a place in the front rank of metallurgical engineers. It was notably in the early days of the hot blast stove that his work was conspicuous, an iron stove of his design having obtained wide acceptance in the Eastern iron trade.

Gradually Mr. Cooper became associated with other enterprises, principally those of his father, including the Peter Cooper Glue Company, one of the most extensive of its kind in the world. The active management of affairs fell more and more upon the shoulders of the young man with his father's declining strength, and upon the death of Peter Cooper the son succeeded to active management. At the time of his death Edward Cooper was identified with many concerns, including the New Jersey Steel & Iron Company, the Chrysolite Mining Company, the Metropolitan Fireproofing Company, in which he was a director, and the United States Trust Company, of which he was a trustee. In addition he was the president of the glue company and of the Trenton Iron Company.

From the early 60's Mr. Cooper took an active part in the politics of New York City. He was always a stanch Democrat. He was a member of the famous Committee of Seventy which accomplished the overthrow of the Tweed ring. He was for many years a bitter opponent of Tammany Hall. He was elected Mayor in 1878 through the combination of the Republican and anti-Tammany forces. He proved an active, energetic and efficient magistrate, and on completing his term retired to private life.

After his father's death, in 1883, Mr. Cooper succeeded to the presidency of Cooper Union, and his labors in behalf of that institution have been constant. He was president and director of the Cooper Union Labor Bureau. He was extensively engaged in general charitable work and did not confine himself to Cooper Union, although his largest bequests were to that institution. Two years ago, with the Abram S. Hewitt estate, he gave to Cooper Union property valued at $600,000. He was a widower at the time of his death, his wife having died 11 years ago.

NOTES.

JAMES K. CASSEDY of the firm of Williamson & Cassedy, railroad and steamship supplies, Philadelphia, died February 18, aged 57 years. He had been in the supply business for 33 years, nine of which were passed with the firms of Potter & Hoffman and J. W. Hoffman & Co., and for the past 24 years he was a member of the firm bearing his own name. During his long and honorable business career he gave special attention to the steamship supply department of his firm, and was well and favorably known to all the large shipbuilding concerns and also to the naval officers who have had charge of the inspection and approval of all material furnished for Government ships. He was also active and well known in the Masonic fraternity. He was a past master of Apollo Lodge and a member of St. Alban Commandery, Knights Templar.

EUGENE F. PHILLIPS of Providence, R. I., president of the Washburn Wire Company and general manager of the allied company, the American Electrical Works, died suddenly February 22, aged 61 years. He leaves a widow and two sons.

Labor Notes.

As has been frequently stated in these columns, a strike is still technically in force in Chicago between the International Association of Machinists and all the plants holding membership in the Chicago Metal Trades Association. This directly affects 33 shops, as the balance of the 90 members of the association do not conduct machine shops. Recently a printing press company, which had until then been a member in good standing in the Metal Trades Association, made a private agreement with the Machinists' Union and accepted union conditions. This fact was heralded by the machinists as a decisive victory and articles were published in the Chicago papers to the effect that the great Chicago machinists' strike had been broken. The Chicago Metal Trades Association, of which Paul Blatchford is secretary, promptly took steps to assure the nonunion men working in the shops of its members that the strike was not broken and that they would be secure in their positions as long as they did faithful work. He had large cards printed, which were nailed up in all the shops of the association, giving notice to that effect.

The Blast Furnace Workers' International Union, which is said to have a membership of 4000 men and which some time ago made a request for an eight-hour day to be effective from April 1, will, it is stated, be granted an advance in wages instead of an eight-hour day. In January, 1904, blast furnace labor was reduced about 15 per cent., and it is probable that the blast furnace operators will agree to restore a part of this reduction in preference to granting the eight-hour day, which is claimed to be impracticable.

Machine molders employed by the National Malleable Castings Company, Sharon, Pa., has received a voluntary advance in wages of 40 cents a day, effective from March 1.

The machine shops of the Erie Railroad at Meadville, Pa., which have been crippled by a strike of union boiler makers for some months, will go on full time and will be operated on the open shop plan.

The H. C. Frick Coke Company has just advanced the wages of all labor, the advance being graduated. It ranges from about 8 to 11 per cent.

Eight-Hour and Anti-Injunction Bills Disposed Of.

WASHINGTON, D. C., February 28, 1905.—The House of Representatives on the eve of the adjournment of the Fifty-eighth Congress has acted adversely upon two measures of much importance to manufacturers and retailers in all trades—namely, the Gompers Eight-Hour bill and the Grosvenor Anti-Injunction bill. These measures have been urged throughout the Congress by the representatives of the American Federation of Labor and other labor organizations and have been opposed by the manufacturing interests in all parts of the country.

B. P. Northrup has been appointed general representative in Mexico for the United States Steel Products Export Company, to succeed F. W. Highberger, who resigned several month ago to accept a position with the Carnegie Steel Company, Pittsburgh.

S. H. Moore, who has been connected with the sales department of the Bourne-Fuller Company, Cleveland, Ohio, has resigned to become treasurer of the Bodifeld Belting Company, with offices on South Water street, Cleveland.

NEWS OF THE WORKS.

Iron and Steel.

Recent plans adopted by the Lackawanna Steel Company contemplate the expenditure immediately of upward of $1,000,000 for new buildings and machinery at the company's plant at Buffalo, including a billet mill. The company has also commenced the operation of its coke ovens at Lebanon, Pa., which will be under the supervision of Talmage Blass, who left Buffalo this week to assume the duties of superintendent at Lebanon.

The Belfont Iron Works Company has completed the building of a new blast furnace at Ironton, Ohio, to take the place of its old stack, which was torn down last year. The new stack is now in operation and is 65 feet high, 16 feet bosh and 10 feet at the hearth.

The Ashland Sheet Mill Company, Ashland, Ky., whose plant has long been idle as a result of a strike which caused financial embarrassment, will resume operations. The mill is said to be one of the most modern. Colonel Frank C. Coles, president of the Ashland Coal & Iron Company, succeeds Ironton Kelly as president of the company.

The Sharon Steel Hoop Company, Sharon, Pa., has let a contract for the erection of a new hoop mill. The cost will be about $500,000.

A dispatch from White Sulphur Springs, W. Va., states that the Southern Development & Construction Company, recently organized with a capital stock of $150,000, will build a 200-ton furnace on Anthony's Creek, Greenbriar County, on the line of the Iron Mountain & Greenbriar Railroad. The company is to develop promising iron ore fields and also has in view the further extension of the railroad, and the building, probably at Lynchburg, of a 100-ton furnace for using iron ore from Pittsville, Va., ore mines The company's offices are in the Stephen Girard Building, Philadelphia. J. H. C. Barr of Philadelphia is president; E. Cooper Shapley of Philadelphia, vice-president, and J. T. Lightner of Danville, Pa., assistant to the president.

The property of the Morgantown Tin Plate Company, Morgantown, W. Va., has been advertised for sale under bankruptcy proceedings. The plant cost more than $200,000 and has never been operated.

The report that the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, would build two more puddling furnaces is officially denied.

The blast furnace of the Carnegie Steel Company at North Sharon, Pa., which has been undergoing repairs for some time, will be ready for blast in about a week. The furnace has been idle for more than a year and is expected to turn out about 300 tons of iron per day.

At a recent meeting of the stockholders of the Lookout Mountain Iron Company, Battelle, Ala., a bond issue of $400,000 was authorized to furnish funds for making large extensions and improvements to its properties, plans for which have not yet reached the point where details are available. The old Board of Directors was elected.

The Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., is planning to spend $1,000,000 on improvements to its various properties.

The Ashland Iron & Mining Company, Ashland, Ky., is building a slag cement mill, contract for the construction of which has been let to C. J. Curtin, 39 Cortlandt street, New York. The main mill building is to be, approximately, 50 x 95 feet, and will contain three Ruggles-Coles dryers, each one capable of driving off 3500 pounds of water per hour from granulated furnace slag. After the slag is dried it will be conveyed to four tube mills for further grinding. All machinery is to be operated by electrical power, the motors for which will be furnished by the Stanley Electric Company, Pittsfield, Mass. An engine of 600 horse-power is to be furnished by the Atlas Engine Works, Indianapolis. The stock house for storing cement will be composed of bagging room, &c., and bins will be of 15,000 barrels capacity. The capacity of the mill will be 500 barrels per day. The foundations are of concrete made from slag cement and the buildings are to be constructed of cement blocks. The company has also just completed its No. 1 furnace, which is 17 x 75 feet, and erected a Tod engine, which is 44 x 60 x 84 feet. This furnace will be blown in some time during March.

General Machinery.

The Lake Shore & Michigan Southern Railroad Company is to build a small addition to its shops at Ashtabula, Ohio. There will not be very much new machinery installed. H. F. Ball, with offices at Cleveland, is superintendent of motive power.

The Climax Road Machine Company, Marathon, N. Y., has placed an order for one improved double angle shear and one single end plate punch and shear of the Hilles & Jones Company's make, which will be installed in the bridge department of the company's works.

J. H. Newbury, Goshen, N. Y., will build an addition to his machine shop, 40 x 100 feet. No new machinery is required.

The Sumter Iron Works, Sumter, S. C., which has been conducted for a number of years by W. E. & John I. Brunson, has incorporated with a capital stock of $12,000, and the following officers have been elected: John I. Brunson, president; W. E. Brunson, vice-president and general manager; E. W. Moise, secretary and treasurer. The company deals in engines, boilers, machinery, &c., and will in a little while be in the market for machinery for installation in its machine shop. As soon as the new machinery is put in the company will have an up to date machine shop and foundry.

The Fawcus Machine Company, Pittsburgh, maker of cut gears, intends to double its capacity. This concern has made frequent additions to its capacity for making cut gears, which were made necessary by its constantly increasing business.

The Dayton Hydraulic Machinery Company, Dayton, Ohio, has been incorporated by Frank L. Canby and others with $30,000 capital.

At the recent annual meeting of the New Castle Forge & Bolt Company, New Castle, Pa., radical changes were made in the directorate and the heavy stockholders who reside in Ellwood City, Pa., were given representation on the board. J. F. Donahoe was elected secretary in place of T. F. Morehead, and a meeting was appointed for March 27 to decide upon a proposed increase in the bonded debt of the company.

D. McVichie, general manager of the Bingham Consolidated Mining & Smelting Company, Salt Lake City, Utah, is having installed at the company's Commercial Mine, Bingham Canyon, Utah, a cross compound air compressor, with a capacity of 600 cubic feet per minute, and at its Eagle and Blue Bell Mine, Eureka, Utah, a cross compound air compressor of the Ingersoll-Sergeant type.

The Fort Dearborn Mfg. Company, Chicago, maker of machinery, is having a new two-story machine shop, 73 x 123 feet, built at Crossing street and Elston avenue.

The Department of Parks, New York, will receive bids until March 9 for one steam road roller and one road scarifier for the parks in Bronx Borough.

The Brandon Developing, Mfg. & Supply Agency, Limited, Brandon, Man., has been incorporated with a capital stock of $40,000. It will manufacture and sell all kinds of cements, machines, steam and gasoline engines. The officers are: President, J. H. McConnell; vice-president, John McClaren; manager and treasurer, R. J. McKeag; secretary and accountant, H. L. Wicher.

The John Muistein Company, recently incorporated, has taken over the business of John Muistein, Brooklyn, N. Y., manufacturer of tools and supplies. The plant is one of the largest of its kind in the city.

The Chicago Special Machinery Company, Chicago, has been incorporated with a capital stock of $5000. F. G. Dickerson is president, A. H. McDonald, vice-president, and Michael J. Walsh, secretary and treasurer. The firm does a general machinery manufacturing business.

The Mountain City Foundry & Machine Works, Greenville, S. C., has incorporated and has equipped a plant for general repair work. Wm. G. Gregory is president and treasurer, C. D. Boling, vice-president, and S. W. Reames, secretary and general manager.

Power Plant Equipment.

United States Rapid Fire Gun & Power Company, Derby, Conn., announces that it has taken over the business of manufacturing the Francke four-ported engines and will build them from 5 to 40 horse-power for the present, and later will probably increase units of horse-power up to any requirements.

The Burns Boiler & Mfg. Company, DePere, Wis., is installing at its works a new 200 horse-power boiler of 160 pounds pressure.

The report current in the Chicago daily papers to the effect that the City Railway Company under its new management would expend between $5,000,000 and $6,000,000 for a large central power house is denied by John A. Spoor, who was elected chairman of the Executive Board.

J. W. Wood, St. Louis, Mo., has been engaged as consulting engineer for the erection of a municipal electric light plant at Terre Haute, Ind. The plant will probably be a compound condensing one of about 1000 horse-power. With Mr. Wood will be associated J. F. McCulloch of St. Louis, who will attend to the electrical part of the contract. They will have offices at 208 Security Building, St. Louis.

Bids will be received at the quartermaster's office, St. Louis, Mo., until March 17, for an electric lighting system for the Jefferson Barracks, Missouri.

The constructing quartermaster, Fort Assinniboine, Mont., will receive bids until March 25 for a 40 horse-power boiler, duplex pump, boiler feed pump, feed water heater, &c.

The Water Board of Bellingham, Wash., has approved the plans and specifications submitted by the city engineer for machinery to be installed in the new pumping station, and the city comptroller has been instructed to advertise for bids for a 500-gallon pump. Bids will also be asked for $1000 worth of brass fittings for use in the water department.

The Board of Public Works of North Tonawanda, N. Y., has rejected all bids for the new boilers to be installed in the pump-

ing station, and new proposals will be advertised to be opened on March 27.

The Niagara Falls Electrical Transmission Company, capital stock $100,000, has been incorporated at Niagara Falls, N. Y., for the manufacture and distribution of electricity and gas and the production and distribution of natural gas in the counties of Erie, Niagara, Orleans, Genesee and Monroe. The directors are Frank A. Dudley and Henry Highland, Niagara Falls, and Fredk. Nicholls, E. R. Wood and R. E. Thomson of Toronto.

The Springfield & Northeastern Railroad Company, with headquarters at Bloomington, Ill., will build an electric railway between Lincoln and Springfield, to cost $600,000. About $150,000 will also be expended in the building and equipment of a power house. The L. E. Myers Company, Monadnock Building, Chicago, are the engineers who have the work in charge.

The Evans Engine Company has been incorporated with a capital stock of $100,000, to manufacture the Evans rotary engine, which is the invention of James M. Evans, whose present address is care of J. C. Buxton, 149 Broadway, New York.

The United Water, Gas & Electric Company, Sedalia, Mo., is having plans made by Joseph McWilliams, Louisville, Ky., for a new power-house to cost about $145,000.

Contract for two 250 horse-power water tube boilers was let by the city of Winnipeg, Manitoba, February 13 to Babcock & Wilcox, Limited, Montreal.

The Sanitary District of Chicago will receive proposals until April 12 for the construction of a power house at Lockport, Ill. The power house is to be a concrete structure, 160 feet wide, 386 feet long and 100 feet in hight. It is to contain nine turbine chambers, with bulkheads designed for a working head of 34 feet of water, a generator room, 62 x 359 feet, and offices, 20 x 62 feet. The work on which proposals are asked includes the supplying of all materials for the power house, excavating the site and erecting the building.

Foundries.

The Standard Sanitary Mfg. Company, Pittsburgh, has purchased a building at Beaver Falls, Pa., and will convert it into a foundry. The company expects to have it in operation within a month or six weeks.

The American Steel Foundries will probably abandon its plant at Pittsburgh, owing to expiration of the ground lease on which the buildings are located. If this is done the concern will probably enlarge the plant at Sharon, Pa., to make up the deficiency in output caused by the abandonment of the Pittsburgh plant.

The W. E. Pratt Mfg. Company, 91 Lake street, Chicago, is adding to its foundry plant at Joliet, Ill., two buildings, 80 x 200 and 125 x 250 feet, respectively. Nearly all of the equipment necessary for this enlargement has already been purchased. The company states that the improvements were made necessary by the phenomenal increase in demand for malleable castings.

The city of Milwaukee, Wis., February 24 awarded the contract for delivering 1600 tons of cast iron water pipe, in 4, 6, 12 and 16 inch sizes, to the United States Cast Iron Pipe Company, Chicago, at $26.85 per ton, delivered.

A 75-ton steel casting to be used in the construction of a bridge in New York State was recently poured at the Chester, Pa., plant of the American Steel Foundries.

The Pilgrim Foundry Company, Plymouth, Mass., manufacturer of stoves, has added a line of iron sinks to the product of its foundry, having acquired this part of the business of the Ellis Foundry Company, Carver, Mass.

The stockholders of the Tacony Iron Company will meet on April 27 at Philadelphia to vote on a proposition to increase the capital stock from $50,000 to $200,000 to furnish funds for doubling the capacity of the plant and otherwise increasing the company's facilities. The plant, which is located at Tacony, Pa., occupies about 9 acres and consists of an iron foundry, machine shop, brass foundry, &c. The principal product is cast iron soil pipe and fittings, for which present orders on the books will absorb the full capacity of the plant until next September. The directors are Wm. J. Latta, Edgar A. Custer and John B. Stevenson, 3d.

The Watkins Machine & Foundry Company, Hattiesburg, Miss., is rebuilding its foundry, which was recently destroyed by fire. The new building will have galvanized iron roofing and siding and will be equipped with the machinery which the company now has in operation in its temporary foundry.

City Clerk Taggard of Richmond, Ind., has been instructed to advertise for bids on castings and patterns for castings used for sewer and other city work.

The Marshall Foundry & Construction Company, Pittsburgh, has been succeeded by a corporation known as the Marshall Foundry Company, with a capital of $150,000. The directors are W. M. McCullouch, W. D. Marshall, Reed F. Blair, William W. Wishart, Pittsburgh; Joseph K. Killinghest, Sewickley.

The Reedy Foundry Company, Chicago, has incorporated for $50,000 to do a foundry and machine shop business, and is located at 91 Illinois street. The incorporators are W. H. Reedy, W. E. Wakefield and Joseph Price. This company is subsidary to the Reedy Elevator Mfg. Company, whose present foundry capacity will be enlarged to accommodate the needs of the newly incorporated foundry company.

The Pilsen Foundry & Iron Works has organized at Chicago to do a foundry and machine business. The company is capitalized at $10,000 and its incorporators are: George Patzcker, Emil H. Schintz and Vincent D. Wyman.

The Novelty Grey Iron Foundry Company, Dallas City, Ill., has incorporated with a capital stock of $10,000. The foundry will make a specialty of light castings, such as stove plate, hardware, machine castings and reservoirs, and will be in operation about March 5. The incorporators are Phil, Edgar P. and Harry A. Schanz.

Bridges and Buildings.

The C. E. Morrison Iron Works, Columbus, Ohio, has moved into the plant in that city which it recently purchased from the American Bridge Company. This new acquisition will be devoted to the manufacture of structural iron and will enable the company to extend its business quite materially. The plant was originally erected by the Columbus Bridge Company, which became the New Columbus Bridge Company, which was absorbed by the American Bridge Company.

The Oltmer Iron Works, recently incorporated with a capital stock of $25,000, has taken over the plant and business of Christian Oltmer, at 318-320 Grand street, Hoboken, N. J., and will continue the manufacture of structural and ornamental iron work.

The Penn Bridge Company, Beaver Falls, Pa., whose plant was recently destroyed by fire, has leased the plant of the Columbia Bridge Company, at Carnegie, Pa., which it will operate until its works at Beaver Falls have been rebuilt.

The City Council at Sioux City, Iowa, has approved plans for the construction of a 1100-foot steel viaduct in Wall street. Joe M. Lewis is city engineer.

J. A. Ross, Frankfort, Ind., has been awarded the contract at $7100 for the erection of a bridge of the Kahn trussed system at Wabash.

General contract for the new Illinois Athletic Club building has been let to the Thompson-Starrett Company, Chicago. Specifications for the power equipment are not yet completed.

Fires.

The Liberty Cut Glass Works, Egg Harbor, N. J., were partly destroyed by fire the last week. The damage is estimated at $18,000.

On February 26 a $5,000,000 fire in New Orleans, La., destroyed a number of docks, freight terminals, two grain elevators and freight sheds belonging to the Illinois Central Railroad.

The finishing shop of the Barney & Smith Car Works, Dayton, Ohio, was recently destroyed by fire, the loss amounting to about $50,000.

A recent fire did $30,000 damage to the Whitman Agricultural Works, St. Louis, Mo.

The machine shop at the plant of the Doherty Organ Company, Clinton, Ontario, was destroyed by fire February 15. The loss is placed at $30,000.

The new machine shop of the South Fork Foundry & Machine Company, South Fork, Pa., was destroyed by fire February 17. The loss is estimated at about $8000.

Fire recently destroyed most of the wood patterns at the plant of the Cedar Falls Iron & Brass Works, Cedar Falls, Iowa, causing a loss of about $12,000, on which there was $3000 insurance.

The Darrah foundry at West Bridgewater, Pa., which was operated by the Crawford Foundry & Machine Company, was recently destroyed by fire. The loss is estimated at $25,000.

The plant of the Jewett City Textile Novelty Company, Jewett City, Conn., was burned February 27, with a loss of $80,000.

Hardware.

The offices of the Cheswick Mfg. Company, manufacturer of agricultural, pressed steel and hardware specialties, has been removed from Cheswick, Pa., to Canton, Ohio, where the company is building large new works.

The Newell Sanders Plow Company, Chattanooga, Tenn., is erecting an addition to its factory and has purchased adjoining ground with a view to further extensions.

The Chattanooga Wheelbarrow & Mfg. Company, Chattanooga, Tenn., has added a full line of tubular barrows and warehouse trucks to its line of products.

The Florence Pump & Lumber Company, Memphis, Tenn., has been incorporated under Maine laws, with C. B. Dempster as president, A. P. Smith, vice-president and general manager; J. W. Burgess, treasurer, and R. H. Yale, secretary, all the officers being residents of Beatrice, Neb., with the exception of Mr. Smith, who lives in Memphis. The business was established in 1893, at Florence, Ala., and moved to Memphis in 1902. It is closely identified with the Dempster Mill Mfg. Company, Beatrice, Neb. The product of the Memphis plant consists of

wood pumps, veranda columns, spindles, balusters, porch railing and builders' supplies.

The Standard Emery & Polishing Company, Taylor street, Springfield, Mass., has incorporated under Massachusetts laws with authorized capital stock of $50,000. The officers are: President, William H. Hawkins; treasurer and manager, William C. Van Alstyne; secretary and clerk, Edward W. Beattie. The business was established some time ago and recently moved from Brightwood to Taylor street.

The Forbes Mfg. Company, Pembroke, Ky., has purchased the Wilson Hardware Company's establishment at that place, and the business will be greatly enlarged and continued by the new concern.

The Meriden Firearms Company, Meriden, Conn., formerly the Fyrberg Arms Company, Hopkinton, Mass., has been incorporated under Connecticut laws, with authorized capital stock of $125,000. The business, which is owned by Sears, Roebuck & Co., Chicago, now occupies the plant built for the Meriden Malleable Iron Company.

A new firm known as the A. J. Cook Whip Company, Westfield, Mass., has been organized to manufacture whips in the Ensign factory, Cherry street, which has been leased for a term of years. Arthur J. Cook will be the general manager of the business. Thirty new platting machines will be installed. The company has a cash capital of $30,000.

George W. Cummings, 35 Congress street, Boston, has opened a new factory for the manufacture of sandpaper on Salem street, Malden, Mass., and expects to produce 50,000 reams per annum. The business is independent of the combination of sandpaper manufacturers.

The Delphos Can Company, Delphos, Ohio, has had such a large demand for its products that it has found it impossible to keep up with orders with the present equipment, although its facilities were materially increased last fall, at which time it moved into a new factory building. An order has accordingly been placed for sufficient additional machinery to increase the former output by over 50 per cent. A recent addition to the company's line is the Delphos nonoverfilling tank for filling hand oilers, especially adapted for mill and factory operatives' use.

The Dana Mfg. Company, Cincinnati, will erect a large plant at Norwood, Ohio, for the manufacture of ice cream freezers, to cost about $100,000.

The Columbian Enameling & Stamping Company, Terre Haute, Ind., has let contracts for the erection of an extension to its present warehouse, the addition to be 64 x 140 feet, four stories in hight, with basement. When this extension is completed the warehouse will be 434 feet long by 64 feet wide and four stories in hight. This enlargement of warehouse capacity is necessitated by the increased output of the manufacturing departments.

Miscellaneous.

John H. Dialogue & Son, Camden, N. J., will rebuild the part of their shipbuilding works which was recently burned.

The Culver Novelty Company has been incorporated at Culver, Ind., with $9000 capital stock, to manufacture gasoline mixers and other machines and devices. The directors are Henry Zechiel, John H. Koontz and David R. Young.

The Sandstrom Short Turn Gear Company has been incorporated at Connersville, Ind., with $30,000 capital stock, by Theo. Sandstrom, Thos. F. Hamilton, Henry P. Doenges and Wm. H. Sherry.

The annual meeting of the Pittsburgh Valve & Fittings Company, with offices in the Frick Building, Pittsburgh, and works at Barberton, Ohio, was recently held. Directors were elected, as follows: A. R. Peacock, C. W. Brown, W. D. Hartupee, C. A. Verner, L. D. Castle, M. J. Alexander, Joseph A. O'Neill and Kenneth McKlaren. James I. Buchanan of Pittsburgh retired from the board on account of press of other business. In the annual report submitted to the stockholders it was stated that in the past year the capacity of the works at Barberton had been doubled and that orders on hand are taking the entire product of the company as fast as made. A new brass foundry is being erected and will be in position within a short time. The company is giving employment to about 500 men.

The Standard Stamping Company, Buffalo, N. Y., has disposed of its plant, corner of Seventh and Hudson streets, and is negotiating for a new factory site in the same city, to which it will remove shortly. The old plant was purchased by C. Kurtzmann & Co., piano manufacturers, who will at once remodel the buildings and equip it with the latest improved machinery for the manufacture of pianos and piano players, employing 250 men.

Receivers have been appointed for the Wisconsin Graphite Company, Allegheny, Pa.

A special meeting of the stockholders of the Lawrenceville Bronze Company of Pittsburgh has been called for March 20 to take action on a proposed increase of the capital from $25,000 to $75,000.

The American Spiral Pipe Works, Chicago, has increased its capital stock from $125,000 to $175,000. No immediate improvements or enlargements are contemplated.

Trade Publications.

Spiral Riveted Pipe.—Abendroth & Root Mfg. Company, Newburgh, N. Y. Catalogue, 64 pages. Describes the Root spiral riveted pipe, giving numerous tables of diameters, gauges, weights and prices of spiral riveted pipe and fittings. Includes a long series of photographs, illustrating installations in which this pipe has been used. Space is also given to the Root & Hudson exhaust heads and other specialties, including the Root water tube boiler. Testimonial letters are appended. Allan F. McIntyre is manager of the newly established Chicago branch of the company, in the Fisher Building.

Winsted, Conn.—The Winsted Business Men's Association, Winsted, Conn., has prepared an illustrated circular, stating the advantages of Winsted as a manufacturing center, with a view to increasing the number of manufacturing establishments and inducing home makers to settle there. Inquiries of the secretary of the association for further particulars are invited.

Machine Tools.—Patterson Tool & Supply Company and Miami Valley Machine Tool Company, Dayton, Ohio. Loose leaf catalogue. Contains bulletins descriptive of a 13½ inch by 6 foot engine lathe, the Dayton power hammer, the Patterson friction disk driven milling machine, Patterson 10-inch sensitive bench drill, the Challenge power hack saw, Patterson drilling machine vise, emery grinder and belt polishing machine, the Gem lathe center grinder and the Tiffany universal boring tool holder.

Steel Boats.—W. H. Mullins Company, Salem, Ohio. Catalogue No. 11. Size 6 x 9 inches, 48 pages. Contains an interesting discourse on the boat of to-day, leading up to the advantages and telling something of the manufacture of stamped steel boats. Illustrations show steel motor boats and row boats of various designs, giving specifications and prices. One of the features is a sectional canoe, which can be taken apart and packed in a small compass.

Automobiles.—The Winton Motor Carriage Company, Cleveland, Ohio. Advance circular. Gives specifications of the several 1905 models of Winton automobiles.

Machine Tools.—Springfield Machine Tool Company, Springfield, Ohio. Illustrated catalogue for 1905. Composed of loose leaf circulars printed on one side only; 9 x 12 inches in size. The subjects covered are: A bench straightening press and centers, 36-inch engine lathe, plain back gearing, heavy pattern; 42-inch engine lathe, triple gearing, light pattern; 36-inch engine lathe, triple gearing, heavy pattern; 18-inch by 6-foot cabinet turret lathe, friction geared head; shafting lathe, 16-inch gack geared crank shaper, motor driven engine lathes; 12, 15 and 20 inch crank shapers; 14, 18 and 24 inch engine lathes; 18 and 24 inch engine lathes, with turrets; power presses. Springfield spindle and axle boring machine; 14, 16 and 18 inch Ideal engine lathes, taper attachment and standard friction countershaft.

Condensers, Vacuum Pumps and Exhausters.—Deane Steam Pump Company, Holyoke, Mass. Catalogue D-23. 104 pages, 5 x 8 inches. Reviews the principal advantages of surface and jet condensers as applied to steam engines, and discusses vacuum pumps, exhausters and air circulating pumps and other auxiliaries. It also treats of the proper condensing apparatus for steam turbines, including improved types of independent air and hot well pumps, separate circulating pumps, air coolers, &c.

Industrial Buildings.—D. C. Newman Collins, consulting engineer and architect, 29 Broadway, New York City. Catalogue B. Deals in general with economic layout, construction and completion of modern industrial plants, mills, factories, warehouses and other buildings, and in particular covers the expert handling of all classes of steel structures. The illustrations show a few of the notable pieces of work which have been completed to date and include the Ledgerwood Mfg. Company, Newark, N. J.; extensions to the plant of the Warren Foundry & Machine Company, Phillipsburg, N. J.; Milliken Bros.' Brooklyn plant, and the locomotive shops of the Lehigh Valley Railroad at Sayre, Pa.

Grate Bars.—Kutztown Foundry & Machine Company, 116 North Broad street, Philadelphia, Pa. Bulletin No. 1. Lists and illustrates Tupper grate bars, standard grates for vertical boilers and standard oblique grates for vertical boilers.

Gasoline Marine Engines.—The Pennsylvania Iron Works Company, Philadelphia, Pa. Illustrated catalogue of Globe gasoline engines for marine service. Deals with their advantages and describes the various styles and sizes of the engines. These are built in capacities of 35, 50, 75 and 100 horse-power, in the four-cylinder type; 10, 16 and 25 horse-power in the two-cylinder type, and 3 and 6 horse-power in the single cylinder type. Tables of dimensions are given. Numerous views show pleasure boats and working boats which are equipped with the Globe engines.

The Chicago Pneumatic Tool Company has changed the name of its monthly publication from *Something Pneumatic* to *Ideal Power*, the reason given being that the rapid extension of its electrical tools necessitated the use of a name that would be broader in its application than that formerly implied. The new publication is of the same size as the old one, 6 x 9 inches, and states on its editorial page that it is published by the Ideal Power Publishing Company, 1005 Fisher Building, Chicago. Thomas C. Best, formerly editor and proprietor of *Motive Power*, published at Chicago, is editor of the new publication.

The Iron and Metal Trades

Leaders in the Iron industry are growing rather uneasy over the accelerated pace which the markets are developing, and the indications of an unwelcome boom are multiplying. The tonnage produced and taken is of unprecedented volume, and yet in many branches makers are falling behind in deliveries, the only exceptions being Steel Rails and Bridge Material. The bridge shops have been running light during the past few months, but are beginning to do better. It is understood, for instance, that the plants of the American Bridge Company, which have been running only 50 per cent. of capacity, have quite recently increased to close to 60 per cent.

There has been a resumption of the buying movement in Pig Iron, and in the Eastern markets it has developed during the past few days on a scale never before witnessed. Eastern Pennsylvania Steel makers have purchased further quantities of Basic Pig, aggregating fully 60,000 tons, for delivery into the third quarter at prices equivalent to $16.50 to $16.75, delivered. The general foundry trade in New England and on the Atlantic Coast territory has been buying in moderate quantities, but for early delivery, the aggregate being quite large. The puddling mills are just entering the market for a liberal tonnage.

In the Central West the Steel Corporation has bought 40,000 tons of Pig Iron, taking 25,000 tons from the Bessemer Association. The same interest has availed itself of some old options on Basic Pig for delivery to Eastern works and is in the market for a considerable quantity for the second quarter.

Chicago and Cincinnati both report a livelier buying movement in Foundry Iron and, like other distributing centers, reflect an upward tendency of prices.

Acute scarcity is observed in the Steel market and fancy prices have been paid for Sheet and Tin Plate Bars.

There is little that is new in the Steel Rail trade. There are indications, however, that the international pool has been making headway and that pending final arrangements the mills are keeping out of one another's territory.

The demand for Plates has been very heavy, reflecting the swelling volume of new orders for rolling stock for the railroads.

Steel Bars have been advanced $2 per ton, from 1.40c. to 1.50c., Pittsburgh. It has been decided, however, not to retain the extra of $1 per ton for Open Hearth Bars over Bessemer Bars, in view of the competition of Iron Bars. The producers of Chain Rods have added $2 per ton to their prices. It is expected that the makers of Hoops and Bands in the Pittsburgh district will also advance prices $2 per ton.

In the Merchant Pipe trade another reduction in discounts equivalent to an advance of $1 per ton has been announced.

The contract for the castings for the new tunnel under the Hudson, amounting to about 21,000 tons, has been awarded to the Bethlehem Steel Corporation, which takes that company out of the market for Merchant Pig for seven months after June 1 to the extent of 3000 tons per month.

The Coke makers are very heavily sold far into the year and are under great pressure to make deliveries. The H. C. Frick Company has just announced an increase in wages to all labor.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

At date, one week, one month and one year previous.

	Mar. 1, 1905.	Feb. 22, 1905.	Feb. 1. 1905.	Mar. 2, 1904.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	$17.50	$17.50	$17.50	$14.50
Foundry Pig No. 2, Southern, Cincinnati	16.25	16.25	16.25	11.25
Foundry Pig No. 2, Local, Chicago	17.50	17.50	17.50	13.25
Bessemer Pig, Pittsburgh	*16.35*	16.35	16.60	13.85
Gray Forge, Pittsburgh	16.00	16.00	16.10	13.00
Lake Superior Charcoal, Chicago	18.50	18.50	18.50	15.25
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	**24.00**	24.00	23.00	23.00
Steel Forging Billets, Pittsburgh	**26.00**	26.00	25.00	....
Steel Billets, Philadelphia	**28.00**	28.00	26.00	24.25
Steel Billets, Chicago	**28.00**	27.00	25.00	24.00
Wire Rods, Pittsburgh	31.00	31.00	31.00	30.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	*14.00*	14.50	16.00	11.50
O. Steel Rails, Philadelphia	**18.00**	18.00	17.50	14.00
O. Iron Rails, Chicago	*19.50*	19.50	21.00	17.00
O. Iron Rails, Philadelphia	23.00	23.00	23.00	15.00
O. Car Wheels, Chicago	*15.75*	16.25	16.50	14.50
O. Car Wheels, Philadelphia	16.00	16.00	16.00	13.00
Heavy Steel Scrap, Pittsburgh	*15.50*	15.50	16.00	14.00
Heavy Steel Scrap, Chicago	*14.00*	14.00	14.50	11.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**1.73½**	1.73½	1.63½	1.43½
Common Iron Bars, Chicago	*1.60*	1.65	1.65	1.40
Common Iron Bars, Pittsburgh	1.65	1.65	1.65	1.34¾
Steel Bars, Tidewater	**1.64½**	1.54½	1.54½	1.44½
Steel Bars, Pittsburgh	**1.50**	1.40	1.40	1.30
Tank Plates, Tidewater	**1.74½**	1.74½	1.64½	1.74½
Tank Plates, Pittsburgh	**1.60**	1.60	1.50	1.60
Beams, Tidewater	**1.74½**	1.74½	1.64½	1.74½
Beams, Pittsburgh	**1.60**	1.60	1.50	1.60
Angles, Tidewater	**1.74½**	1.74½	1.64½	1.74½
Angles, Pittsburgh	**1.60**	1.60	1.50	1.60
Skelp, Grooved Steel, Pittsburgh	**1.60**	1.60	1.55	1.45
Skelp, Sheared Steel, Pittsburgh	**1.65**	1.65	1.60	1.50
Sheets, No. 27, Pittsburgh	2.20	2.20	2.20	2.20
Barb Wire, Pittsburgh	2.25	2.25	2.25	2.50
Wire Nails, Pittsburgh	1.80	1.80	1.80	1.90
Cut Nails, Pittsburgh	**1.80**	1.80	1.75	1.70
METALS:				
Copper, New York	15.25	15.25	15.25	12.50
Spelter, St. Louis	**6.10**	5.97½	6.05	4.82½
Lead, New York	4.45	4.45	4.45	4.50
Lead, St. Louis	*4.35*	4.35	4.37½	4.45
Tin, New York	*28.60*	28.75	29.65	28.00
Antimony, Hallett, New York	7.87½	7.87½	8.50	7.00
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.74	3.74	3.74	3.64

Chicago.

FISHER BUILDING, March 1, 1905.—(*By Telegraph.*)

Steel Bars and Bands were advanced $2 a net ton today. Merchant Steel belonging to the Bar class goes up with Bars, though Hoops are unchanged, for the present at least. Iron Bars, which had been sagging for a week or two and had reached 1.60c. or below, are stronger as a consequence of the advance in Steel Bars. Merchant Pipe has been reduced one-half point in discount, equivalent to an average advance of $1 a ton. Pig Iron has found new strength, though prices have not actually advanced in this market, except on Basic, from those published last week. A number of Southern blast furnaces have withdrawn from the market altogether, and the indications are that the few that are still willing to take business on the $13.50 basis will soon follow suit. Trading in Structural Steel is light. Plates are, if anything, more active since the advance than they were before. Sheets are in better demand, but prices are disproportionately low compared with Plates and other Finished Steel products. The Coke market is strong and procrastinating melters are paying from 50c. to $1 a ton premium for Coke on track and 25c. to 50c. premium for car numbers *en route*.

Bars.—Prices on Soft Steel Bars were advanced $2 a ton to-day, to take effect immediately. This includes Bessemer and Open Hearth Bars and Bands, as well as small Angles and other shapes in sizes belonging in the Bar class. Iron Bars have been weakened of late and have been selling freely at 1.60c., but the advance in Steel Bars tends to stiffen them. We quote 1.60c. to 1.65c., base, half extras, in car lots, Chicago. The new minimum prices on Steel products are as follows, in car lots, Chicago: Soft Steel Bars and Bands, 1.66½c., base, half extras, Bessemer or Open Hearth; Soft Steel Hoops, unchanged but strong at 1.71½c., full extras; Soft Steel Angles, Channels, Tees and

Shapes belonging to the Bar class, 1.76½c., half extras. This brings Steel Bands up to within 5c. of the base price of Hoops and an early advance on Hoops is expected. The same advance has been made in store prices, Steel Bars and Bands being held at a minimum of 1.85c., base, half extras, and Steel Angles and Shapes, 1.95c., half extras, while Soft Steel Hoops are unchanged at 2.10c., full extras, with 5s. to 10c. higher than the minimum prices named for small quantities from store.

Merchant Steel.—The $2 advance made on Steel Bars brings with it advances on most Steel products. The new prices at Chicago in car lots on this class of Steel materials are as follows: Smooth Finished Machinery Steel, 1.91½c.; Smooth Finished Tire, 1.86½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.23½c.; Railway Spring, 1.76½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount in car lots and 45 per cent. in less than car lots in base territory.

Old Materials.—There is almost nothing doing in the Chicago market for Old Materials, as there is an apparent indifference among buyers and no inclination on the part of sellers to force business by unnecessary price concessions. The downward tendency, however, that has been in evidence in this market for the last five or six weeks is still noticeable. The unseasonably warm weather which we have had for the last week has very generally melted the snow and released a large tonnage of Old Material on railroad lines which may be expected to come on the market shortly. Most of the changes noted as compared with last week are reductions, the only advance which we chronicle being 50c. a ton on Steel Car Axles and on No. 1 Cast. The following prices represent the range at which large consumers can buy their materials from Railroads or from large dealers, per gross ton:

Old Iron Rails	$19.50 to $20.00
Old Steel Rails, 4 feet and over	15.00 to 15.25
Old Steel Rails, less than 4 feet	14.00 to 14.50
Heavy Relaying Rails, subject to inspection	22.50 to 23.00
Heavy Relaying Rails, for side tracks	20.00 to 20.50
Old Car Wheels	15.75 to 16.00
Heavy Melting Steel Scrap	14.00 to 14.50
Frogs, Switches and Guards	14.00 to 14.50
Mixed Steel	9.50 to 10.00

The following quotations are per net ton:

Iron Fish Plates	$17.50 to $18.00
Iron Car Axles	20.50 to 21.00
Steel Car Axles	16.50 to 17.00
No. 1 Railroad Wrought	16.50 to 17.00
No 2 Railroad Wrought	15.50 to 16.00
Shafting	16.50 to 17.00
No. 1 Dealers' Forge	12.50 to 13.00
Wrought Pipes and Flues	11.50 to 12.00
No 1 Cut Busheling	10.75 to 11.00
Iron Axle Turnings	11.50 to 12.00
Soft Steel Axle Turnings	11.50 to 12.00
Machine Shop Turnings	11.00 to 11.50
Cast Borings	8.75 to 9.00
Mixed Borings, &c	8.75 to 9.00
No. 1 Mill	9.50 to 9.75
Country Sheet	8.00 to 8.50
No. 1 Boilers, cut to Sheets and Rings	11.50 to 12.00
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	11.00 to 11.50
Railroad Malleable	13.50 to 14.00
Agricultural Malleable	12.50 to 13.00

Metals.—The Metal business is at a standstill and prices are unchanged. Copper is held at 15⅛c. to 15¼c. for Casting, and 15⅜c. to 15⅝c. for Lake, in car lots, with ¼c. to ½c. higher for small lots. Lead is quoted in 50-ton lots at 4.45c., in car lots at 4.50c. and 5c. to 5¼c. in small lots, Pig Tin at 30c. to 30¼c. in car lots, and 30½c. to 31c. in less than car lots. Spelter is in slow demand, the car lot price being 6.15c. and the small lot price 6½c. Sheet Zinc is held at $7.50, base, La Salle, equivalent, after deducting discounts, to $7.25, Chicago, for car lots of 600-lb. casks, with small lots selling at $7.50 to $8. Prices of Old Metals are as follows: Copper Wire, 13½c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12¾c.; Red Brass, 12c.; Red Brass Borings, 10⅜c.; Yellow Brass, Heavy, 9c.; Yellow Brass Borings, 7⅞c.; Light Brass, 7¼c.; Lead Pipe, 4¼c.; Tea Lead, 3.85c.; Zinc, 4½c.; Pewter, No. 1, 19¼c.; Block Tin Pipe, 25c.

(By Mail.)

CHICAGO, February 28, 1905.

Pig Iron.—The last days of last week and the early days of this week have been marked by a great improvement in the buying movement. Already some Southern furnaces have withdrawn their prices, which is the usual method of warning the public that an advance is forthcoming. Iron is still obtainable from Southern furnaces on the basis of $13.50, Birmingham, or $17.15, Chicago, for No. 2 Foundry or No. 2 Soft, but the available tonnage at that price is rapidly decreasing and predictions by sellers all along the line now are that Southern Iron will be $1 a ton higher than present prices before many weeks. It is not expected, however, that this $1 advance, if it comes at all, will come all at once. The heavy demand for Iron in the Pittsburgh district is being reflected by a stronger tone here, although no orders of any magnitude have been closed in this market within a week. It seems evident that either Western melters covered farther into the future with larger tonnages than their Eastern brethren or that the consumption in the West has not been on a par with that in the strictly mill district, because present demand for Iron in States from Indiana westward is not as active as it seems to be in Ohio and eastwardly. Several large foundries in Chicago whose specialty is Iron columns and other castings for buildings are entering the market for larger tonnages of Iron, as they have taken some sizable orders for local building operations. Aside from this the Gray Iron foundry business is rather dull, while makers of malleables are extremely busy. The only change we make in our prices this week is on Basic Iron, which now appears to be held uniformly at an advance of 50c. over No. 2 Southern Foundry by both Alabama and Virginia makers:

Lake Superior Charcoal	$18.50 to $19.00
Northern Coke Foundry, No. 1	18.00
Northern Coke Foundry, No. 2	17.50
Northern Coke Foundry, No. 3	17.00
Northern Scotch, No. 1	18.00 to 18.50
Ohio Strong Softeners, No. 1	19.30 to 19.80
Ohio Strong Softeners, No. 2	18.80 to 19.30
Southern Silvery, 4 to 6 per cent. Silicon	18.65 to 19.65
Southern Coke, No. 1	17.65 to 17.90
Southern Coke, No. 2	17.15 to 17.40
Southern Coke, No. 3	16.65 to 16.90
Southern Coke, No. 4	16.40 to 16.65
Southern Coke, No. 1 Soft	17.65 to 17.90
Southern Coke, No. 2 Soft	17.15 to 17.40
Southern Gray Forge	16.50 to 16.75
Southern Mottled and White	15.90 to 16.15
Malleable Bessemer	17.50
Standard Bessemer	18.50 to 19.00
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon	20.30 to 22.30
Jackson County and Kentucky Silvery, 10 per cent. Silicon	23.30
Alabama Basic	17.65
Virginia Basic	17.65

Billets.—Prices on Billets quoted by mills that are frankly out of the market are based on $26, Chicago, for Bessemer, and $28 for Open Hearth, but the man who wants Billets and who wants them soon has to pay still greater premiums, $30 to $32 a ton for Forging Billets being not at all unusual. These prices are for base sizes, which include the range between 16 square inches and 100 square inches in section, larger and smaller Billets taking premiums above these prices. Meanwhile the base Billet pool prices which have never been rescinded are $24 for Bessemer and $26 for Open Hearth.

Rails and Track Supplies.—The demand for Light Section Rails has been interfered with by the extremely cold weather of the months of January and February, and prices are none too strong at from $24 to $27 per gross ton at makers' mill in car lots or greater. The leading Western mill has booked a fair tonnage of Standard Section Rails within the week under review and is figuring on some round lots. We quote Standard Section Rails in 500-ton lots and greater, $28, at mill. Light Rails, f.o.b. Milwaukee mill, on about the following basis: 8 and 10 lb. Sections, $28; 12-lb., $27; 16-lb., $26; 20 and 25 lb., $25; 30 to 45 lb. Sections, $24; Angle Bars, 1.40c. to 1.50c.; Spikes, 1.70c. to 1.75c.; Track Bolts, 2.40c. to 2.50c., base, with Square Nuts, and 10c. to 15c. higher for Hexagon Nuts. Store prices on Track Supplies range from 15c. to 25c. per 100 lbs. above car lot mill prices.

Structural Material.—Just now this is the quietest commodity on the whole Steel list, and sellers are being put off from week to week and from month to month by the various interests that have been promising such great things in local building operations. Meanwhile the car manufacturers are well filled with business. The Thompson-Starrett Company has been given the general contract for the new Illinois Athletic Club building on Michigan avenue, which will require about 1600 tons of Structural Materials. Prices are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.76½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.76½c.; Angles, larger than 6 inches on one or both legs, 1.86½c.; Beams, larger than 15 inches, 1.86½c.; Zees, 3 inches and over, 1.76½c.; Tees, 3 inches and over, 1.81½c., in addition to the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices charged by local jobbers are advanced $2 in line with the mill advance, making the new prices from store either random lengths or cut to lengths, on Angles, Beams and Channels, base sizes, 2c., with 10c. advance for Angles, Beams and Channels larger than the base sizes.

Plates.—The large tonnage booked by mills from car builders and the steady improvement in demand for Boiler Plates are placing the Plate mills in a position where they are not disposed to force business even at the advanced price. Plate prices are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Sheared and Universal Mill Plates, tank quality, 6¼ to 14 inches, inclusive, 10c. below these prices; Flange quality in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide,

2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange quality, 25c. extra.

Sheets.—A little better inquiry for Sheets is in evidence and buyers are gradually reaching the conclusion that independent Sheet mills will not be able much longer to continue to deliver Sheets at present prices while their cost on Sheet Bars is as great as present quotations. The natural market on Sheets, in view of the cost of materials and the relationship between cost and demand, would be considerably higher than present prices—possibly $2 to $4 a ton. For this reason large Sheet users who are not already covered are inclined to protect their purchases as far into the future as mills will permit at present prices. The following are the official minimum prices for car lots and greater at Chicago, delivered from mill: Blue Annealed Sheets, Nos. 9 and 10, 1.86½c.; Nos. 11 and 12, 1.91½c.; Nos. 13 and 14, 1.96½c.; Nos. 15 and 16, 2.06½c.; Box Annealed Sheets, Nos. 18 and 20, 2.21½c.; Nos. 22 and 24, 2.26½c.; Nos. 25 and 26, 2.31½c.; No. 27, 2.36½c.; No. 28, 2.46½c.; No. 29, 2.61½c.; No. 30, 2.71½c. Store prices rule as follows: Blue Annealed Sheets, No. 10, 2.05c. to 2.15c.; No. 12, 2.10c. to 2.20c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.25c. to 2.35c.; Box Annealed Sheets, Nos. 18 and 20, 2.45c. to 2.50c.; Nos. 22 and 24, 2.45c. to 2.55c.; No. 26, 2.50c. to 2.60c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c. Galvanized Sheets from mill are held quite firmly at the following minimum base prices, f.o.b. Chicago, in car lots: No. 16, 2.71½c.; Nos. 18 and 20, 2.86½c.; Nos. 22 and 24, 3.01½c.; No. 26, 3.21½c.; No. 27, 3.41½c.; No. 28, 3.61½c. These prices range from 75, 10 and 5 for No. 16 to 75, 10 and 10 for the heavier gauges. New prices quoted by local jobbers are as follows for small lots from store in base width: Nos. 10, 12 and 14, 3.10c. to 3.20c.; No. 16, 3c. to 3.10c.; Nos. 18 and 20, 3.10c. to 3.20c.; Nos. 22 and 24, 3.25c. to 3.35c.; No. 26, 3.50c. to 3.60c.; No. 27, 3.70c. to 3.80c.; No. 28, 3.95c. to 4.05c.; No. 29, 4.40c. to 4.50c.; No. 30, 4.85c. to 4.95c. Extras for width vary with the gauges.

Merchant Pipe.—Effective March 1, the leading producer advanced the price of Pipe an average of $1 a ton by reducing discounts one-half point. This makes the new Chicago car lot discounts on Pipe as follows:

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
⅛ and ¼ inch	65.85	49.85	63.85	47.85
⅜ and ½ inch	69.85	57.85	67.85	55.85
¾ to 6 inch	73.85	63.85	72.85	62.35
7 to 12 inches	68.85	53.85	67.35	57.85
Extra strong pipe, ⅛ to ¾ inch	58.85	46.85	56.85	44.85
½ to 4 inches	65.85	53.85	63.85	57.85
4½ to 8 inches	61.85	49.85	59.85	47.85
Double extra strong pipe, ½ to 8 inches	54.85	43.85	52.85	41.85

Boiler Tubes.—This market is strong and buying is active both by consumers and by the large jobbers. The following are the official car lot discounts at Chicago:

	Steel.	Iron.	Seamless.
1 to 1½ inches	44.35	41.35	54.35
1¾ to 2¼ inches	56.35	41.35	42.35
2½ inches	58.35	46.35	45.35
2¾ to 5 inches	64.35	53.35	up to 4 in. 52.85
6 to 13 inches	56.35	41.35	....

Discounts on less than car lots from mill are two points lower, equivalent to an average of $4 a ton higher in price. While there is no unanimity or agreement between jobbers as to the discounts from store, the average for fairly large orders is based on the following discounts, f.o.b. warehouse:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	37½
2¾ to 5 inches	60	47½	47½
6 inches and larger	50	35	..

Cast Iron Pipe.—The city of Milwaukee bought 1600 tons of various sizes and Menasha, Wis., 1300 tons. Both orders went to the leading producer. Prices are firm at $28.50 a gross ton for 4-inch Water Pipe and $27.50 for 6-inch and larger, with $1 extra for Gas Pipe.

Coke.—There are still a number of users of Coke who are paying a premium of 50c. to $1 a ton for Coke on track, as the traffic situation, while greatly improved, is not yet quite able to meet conditions of trade. Regular prices for shipment from oven are based on $3, f.o.b. Connellsville, for 72-hour Foundry Coke, or $5.65, Chicago, though there is a lot of Coke from the Connellsville region in the market at $2.75, while a number of Virginia and West Virginia Cokes are quoted at the basis of $2.50 to $2.75 at the ovens, plus the same $2.65 freight to Chicago. Wise County, Va., operators are asking $3 to $3.25 at the ovens, plus $2.25 freight rate. Milwaukee Solvay is out of the market for spot Coke, but is quoted at $5.65 for future deliveries up to September.

Philadelphia.

FORREST BUILDING, February 28, 1905.

The Iron market has developed a remarkably strong position during the past week. It cannot be claimed that prices are higher, but the extremely large tonnage that has been engaged for forward delivery indicates that the requirements of consumers during 1905 will be unprecedentedly large. Under such conditions it would be illogical to expect lower prices, but there is a strong feeling that high prices would be of no permanent advantage, while the closer they can be kept to the rates now ruling the better it will be for all concerned. They are high enough to give a fair profit, and as a vast amount of business has been contracted for by consumers based on to-day's figures it would be a possible element of disturbance to have them moved up to higher figures. Experience has shown the unsatisfactory results in "booms," and so far as it can be prevented by manufacturers nothing of the kind will be permitted. The past week might very fairly be designated as a boom period as regards sales, but the capacity for meeting the demand has demonstrated that it has been done so far without disturbing prices. It is no doubt true that a similar demand this week or next week would not be met without some advance in prices, but no such demand is expected, probably not for weeks or months to come, for the very simple reason that buyers have already secured enough to supply their maximum requirements for at least three or four months to come, and in part to the end of the year. There is, of course, the usual day to day demand, which may be very much larger than usual, and if there is any rise in prices it will doubtless have its inception from this source. If the demand proves to be really greater than the supply, higher prices will be unavoidable unless prevented by imports which cannot be made at to-day's level of prices. A dollar to two dollars more would be near the danger line, but it is hoped that it will not be reached, although the conditions which would develop such a contingency may seem very alluring at a distance. The final outcome, however, would doubtless be as unsatisfactory as in former periods when Iron was imported on a large scale.

Pig Iron.—The market has taken a new start since date of our last report and sellers are becoming somewhat taken aback by the extraordinary demand. There seems to be no limit to requirements and almost anything that can be had at last week's prices is freely taken. Large lots of Basic have been taken since Saturday, with other large lots under negotiation, chiefly for the last half of the year. For such deliveries $16.50 has been had, but the usual price is $16.60 to $16.75, some asking as high as $17 for special deliveries. It was supposed that most of the requirements for 1905 had been covered, but the renewed demand indicates otherwise. Buying cannot continue indefinitely, however, and it will be strange indeed if there is not more or less of a quieting down in the near future. The movement has not been confined to any particular grade either, as both Foundry and Mill Irons have been heavily bought, although prices are only slightly better than they were a week ago. It would be an easy matter to make an all around advance of 25c. to 50c. per ton, and it should cause no surprise to see an announcement to that effect at almost any time. Manufacturers are extremely conservative, however, and are meeting the demand with the utmost liberality in the hope of heading off any premature movement. Meanwhile we quote as follows for Philadelphia and nearby deliveries, regulated according to quantity, character of Iron and date for delivery:

No. 1 X Foundry	$17.75 to $18.00
No. 2 X Foundry	17.50 to 17.75
No. 2 Plain	17.00 to 17.25
Standard Gray Forge	16.00 to 16.50
Ordinary Gray Forge	15.50 to 15.75
Basic	16.50 to 16.75
Low Phosphorus	20.00 to 20.50

Muck Bars.—There is no great activity, but some business has been done at a little better than $28.75, f.o.b. seller's mill. This is considered rather an extreme figure, but with the prospect of dearer Pig Iron sellers are very tenacious in their prices. Low Phosphorus Bars of standard quality command $38.50 to $39, according to delivery.

Steel.—There is a strong market, and $28 is now a very inside figure, and prompt shipments are difficult to arrange, as the mills are amply supplied with business.

Plates.—There is no material change in the general situation, neither is there anything to indicate that there will be in the near future. As mentioned last week, large buyers took advantage of the expected advance in prices and secured a large tonnage to be specified as the season progressed. These are coming in very freely, so that new business is not particularly important, nor is it likely to be for some time to come, although in the meanwhile mills have ample assurance of steady work for an indefinite period. Prices are as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, over 14 inches wide	1.73½	1.78½
Tank, Bridge and Boat Steel, rectangular Plates, 14 inches wide and under	1.63½	1.68½

Flange or Boiler Steel	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.93½	1.98½
Still Bottom Steel	2.03½	2.08½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Per 100
3-16-inch thick	$0.10 pounds extra.
Nos. 7 and 8, B. W. G.	.15 "
No. 9 B. W. G.	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 110 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "

Structural Material.—Conditions are almost identical with those in the Plate trade, so that it is hardly necessary to say more than that prices are unchanged, as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.65c. to 1.68c.

Bars.—The Bar Iron trade is very active and is in most respects entirely satisfactory to manufacturers. There is a good demand at prices ranging from 1.73½c. to 1.80c., delivered. Specifications are coming in promptly and conditions are about as favorable as they ever are in the Bar trade.

Sheets—Active at strong and advancing prices.

Old Material.—Holders are determined to maintain prices, and while consumers are taking as little stuff as possible they find it impossible to force a reduction from the rates recently paid. Some Steel is being picked up at around $17.50, delivered, but as a rule the full asking prices, or near to them, are necessary to secure good sized lots. This applies to nearly every article on the list on which prices are practically the same as last week—viz., for deliveries in buyers' yards:

Old Steel Rails	$18.00 to $18.25
No. 1 Steel Scrap	17.50 to 18.00
Old Steel Axles	20.00 to 21.00
Old Iron Axles	23.50 to 24.25
Old Iron Rails	23.00 to 24.00
Old Car Wheels	16.00 to 16.50
Choice Scrap, R. R. No. 1 Wrought	21.50 to 22.50
No 1 Yard Scrap	19.50 to 20.50
Machinery Scrap	15.50 to 16.00
Low Phosphorus Scrap	20.50 to 21.50
Wrought Iron Pipe	16.50 to 17.00
No. 1 Forge Fire Scrap	16.50 to 17.00
No. 2 Forge Fire Scrap, Ordinary	12.00 to 13.00
Wrought Turnings	15.00 to 15.50
Axle Turnings, Choice Heavy	16.00 to 16.50
Cast Borings	11.25 to 11.50
Stove Plates	13.50 to 14.00

Cincinnati.

FIFTH AND MAIN STS., March 1, 1905.—(*By Telegraph.*)

Pig Iron.—The market during the past week has been active, although the buying was possibly on a smaller scale than the week previous. Several of the larger consumers have come into the market for considerable tonnage, which has had an important bearing on maintaining prices, especially as regards Southern Iron. Southern No. 2 is well established on a $13.50, Birmingham, basis, and is both maximum and minimum for Iron coming from this territory. The only exception that can possibly be taken to this quotation is where consumers have submitted specifications calling for Iron with silicon 2.25 or over, which, on an analysis basis, would constitute an ordinary Southern No. 2 Foundry, yet in reality is not No. 2 and is the product of furnaces running high in silicon and is equivalent to No. 3 Foundry. In such instances the price obtained was at No. 3 Foundry quotation. Northern No. 2 is reported unchanged from what it was quoted a week since, $16 being maximum. One of the large sales reported for the week was 10,000 tons of Southern mixed grades to a large selling agency, it paying schedule price for same; another a sale of 14,000 tons for a large concern at Allegheny for second and third quarters delivery, 10,000 tons being Northern at $15.75, furnace, and the remainder Virginia Iron at $14.50, furnace. Another large industry in Indiana bought 3250 tons for third quarter delivery of analysis Iron, 2000 tons equivalent to No. 2 and 1250 tons equivalent to No. 4. The largest inquiry that is now on the market is for 1000 tons of Southern No. 4 for second quarter delivery to be made in central Indiana. In addition to this agents report a fair sprinkling of smaller orders, ranging from a carload to 500 tons. Foundry demand, especially among the smaller concerns, is said to be quiet, while the larger concerns along this line are beginning to feel the market. We learn of one inquiry from one of the latter from southern Ohio figuring on 1500 tons. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows.

Southern Coke, No. 1	$16.75
Southern Coke, No. 2	16.25
Southern Coke, No. 3	15.75
Southern Coke, No. 4	15.50
Southern Coke, No. 1 Soft	16.75
Southern Coke, No. 2 Soft	16.25
Southern Coke, Gray Forge	15.25
Southern Coke, Mottled	$14.75 to $15.00
Ohio Silvery, No. 1	20.65 to 21.15
Lake Superior Coke, No. 1	17.40 to 17.65
Lake Superior Coke, No. 2	16.90 to 17.15
Lake Superior Coke, No. 3	16.40 to 16.65

Car Wheel and Malleable Iron.

Standard Southern Car Wheel	$18.50 to $19.00
Lake Superior Car Wheel and Malleable	18.00 to 18.50

Coke.—Trade is good and conditions easier. Consumers are being well taken care of, the situation being much better than for several weeks. Prices are firm and unchanged, the best grades of Connellsville Foundry bringing from $2.75 to $3, f.o.b. ovens.

Plates and Bars.—The demand for Structural Iron is increasing and trade generally is improving. Delays in moving shipments are causing annoyance, but the situation is showing marked improvement. The association meets today in New York and it is expected that Bar Steel will be advanced $2 per ton. Prices, however, at the present are unchanged. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.53c., with half extras; the same in smaller lots, 1.75c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; smaller lots, 2c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.73c., in carload lots.

Old Material.—The market for this class of material is not as active as was anticipated it would be at the close of February. There is, however, a fair trade, but nothing out of the ordinary. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $17 to $18 per net ton; No. 1 Cast Scrap, $14 to $14.50 per net ton; Iron Rails, $21.50 to $22 per gross ton; Steel Rails, rolling mill lengths, $14.50 to $15 per gross ton; Relaying Rails, 56-lb. and upward, $23 per gross ton; Iron Axles, $21 to $22 per net ton; Car Wheels, $16 to $17 per gross ton; Heavy Melting Scrap, $14.50 to $15 per gross ton; Low Phosphorus Scrap, $17 to $18 per gross ton.

Birmingham.

BIRMINGHAM, ALA., December 27, 1905.

When one says that during the past week the Iron market held strong at unchanged prices he expresses its condition in a nutshell. The inquiry improved and some important buyers were feeling the market assiduously, but the aggregate transactions concluded were not quite so great as those of the preceding week. The sellers were harder to move than buyers anticipated and their assaults on prices were suspended, with not much accomplished in the way of concluded trades.

There were inquiries for lots of 20,000, 10,000 and down to 5000 tons on which the buyers were willing to be accommodating as to delivery. There were a few acceptances of this character of orders, but the amounts were scaled down 50 per cent. or more and deliveries were made to suit sellers' convenience. The matter of delivery was in some instances the stumbling block to concluded trades. Sellers are not inclined to contract for delivery the second half of the year without an added premium over current values, and buyers are, as a rule, insistent upon that point. It is refused oftener than it is granted. Several sales have been missed because of this difference.

Only occasionally will sellers admit that transactions were made on a basis of $13.50 for No. 2 Foundry, but it is pretty safe to say that no inconsiderable part of the sales made were on that basis. This applies particularly to transactions for round lots. As an illustration of market conditions, a leading interest in one day had inquiries for 50,000 tons and accepted but a fraction of the amount desired. There were orders for lots from 5000 tons down to single car lots, and these were booked at varying prices from $13.50 up to $14 basis for No. 2 Foundry. One lot of 600 tons sold at basis of $13.75 and another lot of 2000 tons at the same price, with some of it running into the third quarter. Another lot of 1500 tons went on the same basis. One lot of Gray Forge was sold at $13. The amount was 250 tons. But this grade is not so firmly held by all, as in some instances it went in moderate amounts at $12.75. What might be called other round lots were sold on a basis of $13.75 for No. 2 Foundry. Nos. 1 Soft and Foundry are held at $14.50. These quotations show a varying market, and that is just what it is. If the seller's price is declined by the buyer it is a matter of indifference to the former and he has the consoling belief that he will later get a higher value.

The fire in the Sumter coal mines forced the banking of a furnace at Bessemer and the sad explosion at the Virginia mines will force the closing of the large furnace of the Alabama Steel & Wire Company at Gadsden, and it may be a month before it regains its normal conditions. These furnaces were dependent, at least in part, upon these mines for their supply of fuel.

There is as yet no relief as to the Coke and Coal situation. An actual and a very inconvenient scarcity of both has been felt, and while necessity prompted liberal prices for prompt delivery of each no one has been the gainer, for the delivery could not be made. Kisses go by favor, but even favor has failed of late to secure any Coke or Coal. Prices are quoted unchanged, but they are nominal. A considerable amount of Coke is due from other districts from which purchases have been made and with good weather affairs will be greatly improved as to supplies. Coal naturally was advanced during the bad weather we had and it is as yet held at the advance, being $1.50 at mine for the run of the mine.

More than 100 miners at the Virginia Coal mines lost their lives by the explosion there, and the neighboring mines were depleted of their forces to aid in their rescue. Not a single man was found alive to tell the story of the explosion. Water has risen in the mines since the explosion and preparations are being made to pump it out. The Governor of Alabama has ordered a thorough investigation to be made of the causes of the calamity, and the district has so far contributed about $25,000 to the bereaved families of the miners. This will probably be supplemented by $50,000 more. The order of United Mine Workers made a donation of $5000 from its treasury funds.

The Birmingham Bridge Company was incorporated the past week, capitalized at $5000, to manufacture Steel and Iron, do structural work, build bridges, contract for and erect buildings, &c. The incorporators are John C. Forney of this city, W. H. Payne of Atlanta and L. L. Collins of Cedartown, Ga.

The Knight & Pickett Agency Company was incorporated, capitalized at $10,000, to develop and deal in Ore, Limestone, Dolomite, Coal and other properties. The incorporators are A. W. Sims, E. B. Forman, E. B. Pickett and S. S. Knight.

The Exchange Machine Company changed its name to that of the Vulcan Machine & Foundry Company and increased its capital to $10,000.

What is known here as the Moran corner, situated at Twentieth street and Fourth avenue, has been purchased for $90,000 by the same interests that control two of our skyscrapers, and it is semiofficially stated that another skyscraper will be erected for a hotel to surpass in every particular those now occupied. The cost, it is said, will be $750,000. This is but the forerunner of other enterprises that are being hatched out.

There is to some extent a revival of inquiry for promising investments in Ore and Coal properties, but there have as yet been no trades closed. H. F. De Bardeleben is opening up some virgin Coal properties on the line of the Seaboard Air Line Railroad in the neighborhood of Leeds. Negotiations are on foot for the opening of other mines, and if the consolidation now being organized in New York is carried to successful conclusion this district will be a veritable hive of industrial pursuits.

Pittsburgh.

PARK BUILDING, March 1, 1905.—(*By Telegraph.*)

Pig Iron.—Generally speaking, the Pig Iron market is quiet as far as inquiries go, but prices seem to be very strong. There are no negotiations on with the United States Steel Corporation for the purchase of additional March Iron, but it seems certain that the corporation will need more Iron for this month. Bessemer and Basic Iron continue to be held at $15.50, Valley furnace, or $16.35, Pittsburgh. There is some speculative Bessemer and Basic Iron in the hands of dealers that could probably be bought at about $15.25, Valley furnace, but the tonnage of such Iron is relatively small. The recent heavy purchases of Foundry Iron have firmed up the market a good deal, and Northern brands of No. 2 are held at $16, Valley furnace, or $16.85, Pittsburgh. Nothing has been done as yet with the inquiry of the Wheeling Mold & Foundry Company for 12,000 tons, to be used in tunnel castings. There is very little inquiry for Gray Forge Iron, but a local consumer bought last week about 2000 tons of Northern on the basis of $15.15, Valley, or $16, Pittsburgh.

Steel.—The Steel mills are simply overwhelmed with tonnage in Billets and Sheet and Tin Bars and are from two to four weeks behind in deliveries. We note a sale of 10,000 to 12,000 tons of Open Hearth Plate slabs on the basis of about $26, maker's mill. Bessemer and Open Hearth Billets, ordinary carbons, for reasonably prompt shipment, bring $24, maker's mill. Sheet and Tin Bars for prompt delivery readily command from $25.25 to $25.50 for Long Bars and from $25.50 to $26 for Cut Bars.

Chain Rods.—The mills rolling Chain Rods have advanced prices $2 a ton and now quote these on the basis of $33 to $34, maker's mill.

Chain.—A meeting of the Chain manufacturers is being held in Pittsburgh to-day (Wednesday) and is very fully attended. Sentiment seems to favor strongly an advance of about $2 a ton in Chain to offset the advance in price of Chain Rods.

(*By Mail.*)

The past week has been a somewhat strenuous one and the market is strong from every point of view. On Thursday the United States Steel Corporation bought 15,000 tons of Bessemer Iron from W. P. Snyder & Co. and on the next day bought 25,000 tons from the Bessemer Pig Iron Association, paying the same price for all. This makes a total of 70,000 tons of Bessemer Iron bought by the Steel Corporation in February for delivery in the Pittsburgh district and to Lorain, where the new Tube mills of the National Tube Company are located. It is pretty certain that the corporation will buy additional Iron for March shipment and may possibly do so this week. A local consumer bought yesterday 2000 tons of Basic Iron for April and May delivery at a price somewhat under $15.50, Valley furnace, the Iron having been sold by a dealer who had to furnish shipping directions for it. It now develops that the greater part of the tonnage placed last week by the Standard Sanitary Mfg. Company was on the basis of $16, Valley furnace, for Northern No. 2, and the market to-day is very firm at this price. Small lots of Northern No. 2 are being sold as high as $16.50, Valley furnace, and the market seems very firm. A local consumer bought last week about 2000 tons of Northern Forge Iron on the basis of $15.15, Valley, or $16, Pittsburgh. While there is not much new inquiry in the market for Pig Iron prices are firm, with an upward tendency. The Bessemer Pig Iron Association and W. P. Snyder & Co., who are the principal sellers of Bessemer and Basic, absolutely refuse to shade $15.50 at Valley furnace or $16.35, Pittsburgh. It is a fact, however, that there is still some speculative Bessemer and Basic in the hands of dealers, who are offering it at $15.25 to $15.30, Valley furnace, but the tonnage is small and really cuts little figure in the general market. The output of Pig Iron at the present time is running at the rate of about 22,000,000 tons a year, but it seems that it is being used as fast as made and stocks at the furnaces and in the yards of consumers are lighter than for some months. It is believed that this month's report will show lighter stocks of Pig Iron on hand March 1 than on February 1. The fact that the Republic Iron & Steel Company has plans made for the building of a new blast furnace at Haselton, Ohio, is an item of interest in the Pig Iron trade.

The demand for Billets, Sheets and Tin Bars continues exceedingly active and all the mills are full of work and more or less behind on deliveries. Long Sheet Bars sold in the past week at $25.25, maker's mill, while Cut Bars have sold at $25.50 to $26, maker's mill. A leading Steel plant is reported to have sold a round tonnage of Open Hearth Slabs to an Eastern Plate mill at about $26, maker's mill. It is stated that the Carnegie Steel Company will start up its Bessemer Steel plant at Columbus, Ohio, but this is not officially confirmed.

Effective from March 1, the National Tube Company lowers discounts on Merchant Pipe one-half point, equal to an advance of $1 a ton. The Steel Bar Association met in this city to-day and advanced prices of Bessemer and Open Hearth Steel Bars $2 a ton, or, from 1.40c. to 1.50c., f.o.b. Pittsburgh. Early announcement is expected from the leading interest of an advance in Black Sheets and Tin Plate, but as yet this has not been made. The whole market on Finished Iron and Steel is exceedingly strong and the mills have all the work they can turn out.

The announcement that the Baltimore & Ohio Railroad will spend more than $10,000,000 in buying new equipment is a very encouraging feature of the situation, indicating as it does, that the leading railroads are about to build up their equipment and also add to it to take care of the immense freight traffic. With the railroads buying liberally the Iron and Steel mills will have all they can do to take care of the immense tonnage that will come to them.

Ferromanganese.—The demand for Ferro continues active and considerable foreign is coming into this market. We quote 80 per cent. domestic Ferro at $45, delivered, for large lots. It is said that foreign is being sold at slightly less than this price.

Rods.—There is a moderate inquiry for Rods, and prices continue very firm on the basis of $31 to $32, Pittsburgh, for Bessemer and Open Hearth. Chain Rods are quoted at slightly higher prices.

Skelp.—The leading Skelp mills are well filled up with tonnage, and some of the leading Pipe mills that depend on constituent interests for Skelp are having trouble in getting deliveries as fast as needed. We quote Grooved Iron Skelp, ordinary widths and gauges, at 1.65c. to 1.70c.; Sheared, 1.75c. to 1.80c.; Grooved Steel Skelp, 1.60c. to 1.65c., and Sheared, 1.65c. to 1.70c. For very narrow or very wide sizes the mills ask higher prices.

Muck Bar.—There is not much inquiry for Muck Bar

at present, and we quote best grades made from all Pig Iron at $28 to $28.25, Pittsburgh.

Steel Rails.—Western roads have recently placed about 150,000 tons, and more orders involving considerable tonnage are coming up. The outlook for the Rail trade is regarded as very favorable. It is said the mills have booked about 1,300,000 tons so far for delivery this year. We quote $28, at mill, for Standard Sections. Light Rails are somewhat quiet, and we quote at $23.50 to $26, depending on weight.

Structural Material.—No important contracts have been placed in this district since our last report, but we can state that the outlook for the Structural trade is very much better than for some time, and a good deal of business is in sight. Work will be started about April 1 on an addition to the Frick Building in this city, which will take 3000 tons or more. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.60c.; Angles, 8 x 8 and 7 x 3½ inches, 1.70c.; Zees, 3-inch and larger, 1.60c.; Tees, 3-inch and larger, 1.65. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—The tonnage in Plates is extraordinarily heavy and it is said that on certain sizes the Carnegie Steel Company is booked up full to October 1. All the leading Plate mills are practically sold up for the next two or three months. Very heavy contracts were placed by the Steel car interests, Boiler makers and other consumers of Plates prior to the recent advance in prices, and specifications on these contracts are coming in very freely. It is stated that if tonnage continues to come in in the future as it has in the past consumers will soon be paying premiums to get early deliveries of Plates. We quote: Tank Plate, ¼-inch thick, 6¼ to 14 inches wide, 1.50c., base; over 14 inches wide and up to 100 inches in width, 1.60c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges	$0.10
Gauges No. 7 and No. 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A.," and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.40c. f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—Weather conditions have been somewhat against the Sheet trade for the past three or four weeks, particularly in Roofing Sheets, all outdoor work having been practically suspended, and as a result the Sheet mills have piled up fairly heavy stocks of Roofing Sheets, but which will move out freely just as soon as good weather comes. Buyers are specifying quite freely on contracts for Black and Galvanized Sheets, and shipments by the mills are quite heavy. As yet no advance in Black Sheets has been made by the leading interests or the independent mills, but this may come at any time. The independent mills are still having trouble in getting deliveries of Sheet Bars, all the Steel mills being very much behind in filling orders. We quote: No. 24, box annealed, one pass through cold rolls, 2.05c.; No. 26, 2.15c.; No. 27, 2.20c., and No. 28, 2.30c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.85c., Nos. 25 and 26, 3.05c.; No. 27, 3.23c.; No. 28, 3.45c. We quote No. 28 Gauge Painted Roofing Sheets at $1.65 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at $2.95 for 2½-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—At a meeting of the Steel Bar Association, held in this city to-day (Tuesday), Bessemer and Open Hearth Steel Bars were advanced $2 a ton, or, from 1.40c. to 1.50c., base, for carloads and larger lots, with the usual advances for smaller lots. A very heavy tonnage in Steel Bars was placed by leading consumers prior to the advance, while specifications on old contracts are coming in very freely. New tonnage in Iron Bars is quite active and the market is firm. We quote Common Iron Bars at 1.65c. to 1.70c. and Refined Iron Bars, 1.75c. to 1.80c., f.o.b. Pittsburgh. We quote Bessemer and Open Hearth Steel Bars at 1.50c., base, in carloads and larger lots, with the usual advances for smaller lots.

Hoops and Bands.—With the advance of $2 a ton in Steel Bars, Hoops and Bands will probably be put up the same amount by the three leading mills, but as yet this has not been done. We quote Steel Hoops at 1.55c. and Bands at 1.40c., extras on the latter as per Steel card. There is practically no new tonnage being placed in either Hoops or Bands, consumers being covered by old contracts at lower prices, and which run up to July 1. Specifications on these contracts are coming in quite freely.

Tin Plate.—The demand for Tin Plate continues abnormally heavy, the mills being pushed to their utmost to get out product as fast as wanted. In some cases premiums of 5c. to 10c. a box have been paid for Tin Plate for shipment in second and third quarter. Announcement of an advance by the leading interest is expected at any time. We continue to quote 100-lb. Cokes at $3.50 net, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in 10 days.

Merchant Pipe.—Effective on March 1, the National Tube Company and the independent mills have lowered discounts on Merchant sizes of Pipe one-half point, equal to an advance of $1 a ton. The National Tube Company has taken a contract from the United States Natural Gas Company for about 70 miles of Line Pipe, made up of 10, 14 and 16 inch. Weather conditions have been somewhat against the Pipe trade in the past two or three weeks and stocks held by the mills are larger than for some time. However, these stocks are expected to move out freely just as soon as good weather comes that will permit outside operations. The tone of the market is firm, discounts to consumers in carloads effective from March 1 being as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
⅛ and ¼ inch	67½	51½	65½	49½
⅜ and ½ inch	71½	59½	69½	57½
¾ to 6 inches	75½	65½	74	64
7 to 12 inches	70½	55½	69	53½
Extra strong, plain ends, ⅛ to ⅜ inch	60½	48½	58½	46½
½ to 4 inches	67½	55½	65½	53½
4½ to 8 inches	63½	51½	61½	49½
Double extra strong, plain ends, ⅛ to 8 inches	56½	45½	54½	43½

Boiler Tubes.—The railroads are making very heavy purchases of Boiler Tubes and the demand from general consumers is also large, the mills having all the tonnage they can take care of for the next several months. Discounts in carloads are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	43	46
1¾ to 2¼ inches	43	58
2½ inches	48	60
2¾ to 5 inches	55	66
6 to 13 inches	43	58

Merchant Steel.—The demand for nearly all grades of Merchant Steel is active, and it is stated the Cambria Steel Company is practically out of the market as a seller for early delivery. The Crucible Steel Company is asking premiums over regular prices for prompt shipments. We quote: Tire Steel, 1.65c. to 1.75c.; Smooth Finished Machinery Steel, 1.75c. to 1.85c.; Open Hearth Spring Steel, extra quality, 2.25c. to 2.50c.; Tool Steel, ordinary grades, 5¾c. to 8c., extra grades 10c. and upward. The demand for Shafting is fairly active, but most leading consumers covered before the recent advance in prices. We quote Cold Rolled Shafting at 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—We quote Railroad Spikes at $1.65 to $1.70 per 100 lbs. in carloads, and $1.75 in less than carloads, f.o.b. car maker's mill.

Spelter.—The Spelter market has firmed up again, and there is more inquiry. We have advanced prices slightly, and now quote Prime Western Spelter at 6c. to 6.05c., St. Louis, equal to 6.12½c. and 6.17½c., Pittsburgh.

Coke.—Conditions in the Coke trade continue active. The H. C. Frick Coke Company has secured the output of the Hecla Coke Company and several other smaller concerns in the Connellsville region. Out of about 29,000 ovens in the Upper and Lower Connellsville region only about 1600 are idle, the output of both regions last week having been about 335,000 tons. Prompt Furnace Coke is still quoted at $2.50 a ton at oven, but on contracts for extended delivery could be bought at $2 to $2.25 a ton. Foundry Coke of best quality commands $2.75 to $3 a ton.

Iron and Steel Scrap.—The better feeling in the Pig Iron market has extended to Scrap, which is firmer than for some time. Some dealers have advanced prices slightly and are disposed to hold their Scrap for still higher figures. We quote: Heavy Melting Scrap, $15.50 to $16; Bundled Sheet Scrap, $14.50; No. 1 Wrought Scrap, $19.50; Wrought Iron Turnings, $13.50 to $13.75; Cast Iron Borings, $10.25 to $10.50; Steel Rails, short pieces, $15.75 to $16; No. 1 Cast Scrap, $15.25 to $15.50; Iron Car Axles, $22 to $23, all in gross tons, f.o.b. Pittsburgh. On a firm offer and for

prompt shipment some dealers might slightly shade above prices.

The Charles Dreifus Company of Pittsburgh has been incorporated with a capital of $100,000, the incorporators being Charles Dreifus, H. J. Lewis and W. H. Barr. The new company will take over the business of Charles Dreifus & Co., dealers in Iron and Steel Scrap of all kinds, with offices in the Frick Building, Pittsburgh.

Cleveland.

CLEVELAND, OHIO, February 28, 1905.

Iron Ore.—The lake branch of the Longshoremen's Union will hold a wage conference with the dock managers March 27 to discuss the rates for unloading Ore this year. While the dock managers have no connection with the lake vessel owners directly, there is a certain strong tie between them. The dock managers at first were disposed to follow the Lake Carriers' Association and dispense with organized labor on the lakes. The yielding of the managers to the demands for a conference has a tendency to undermine the action taken by the Lake Carriers' Association and threatens strife on the lakes which may tie up lake commerce for a short time. The longshoremen have admitted the pilots to affiliation and are ready to stand by the pilots for recognition by the Lake Carriers' Association. The form this situation will take in the dock managers' conference will be whether the longshoremen shall renew their contract with the docks not to engage in any sympathetic strike. The lake rate situation on Iron Ore hangs on the outcome of this conference. The vessel owners, being disposed to the belief that their boats will be delayed at the outset and a short season of navigation ensue, are prone to hold for higher rates, asking 85c. from the head of the lakes. The Ore shippers, taking into account the already enormous carrying capacity and counting on the faster unloading machinery and the big increase in tonnage this year, are basing their rates on the capabilities of the larger boats and are disposed to offer 75c. from Duluth if the vesselmen make contracts immediately. This the latter are not disposed to do and the two sides are 10c. apart, with a compromise on an 80c. basis possible. Sales of Ore continue in a small way, nothing of any real importance being done. One estimate of output is that the mines at the head of the lakes alone will ship 20,000,000 to 21,000,000 tons this year. Prices hold at $3.75 for Bessemer Old Range, $3.50 for Bessemer Mesaba, $3.25 for non-Bessemer Old Range and $3 for non-Bessemer Mesaba.

Pig Iron.—Strength is shown all through the local Pig Iron market. The Basic trade, especially has grown stronger on a good demand and a comparative shortage of supply, with sales amounting to 1000 tons closed at $15.50 in the Valleys. The buying of Bessemer Iron through Pittsburgh has been the principal feature in that branch, with a little buying here by the smaller consumers, on which transactions the price has held steady at about $15.50 to $16, the latter rate prevailing on the smaller lots. There has been a stronger tone to the foundry trade also. Not very much has been done, however. Spot buying is just moderate, but with a satisfactory run of small orders coming in all the time. The price holds at about $16 in the Valleys for No. 2 as a basis. There are some sales of Southern Iron at $13.50, small lots mostly being placed for mixtures. Coke is a little stronger. Good standard 72-hour Foundry Coke is selling at $3 at the oven, with some off Cokes selling at $2.75 at the oven. There is a good demand for Furnace Coke at prices ranging from $2.50 to $2.60 at the oven.

Finished Iron and Steel.—Bar Iron buying is spasmodic and intermittent. All the mills are running from hand to mouth. The higher prices, which are responsible for the shyness of buyers, have been based altogether on the high prices for Scrap. Some of the dealers in that material are getting tired of carrying their loads and are willing to sacrifice. This promises a cut in Scrap and a consequent lessening of the stress in Bar Iron. But it will be a long time until conditions will permit any liberal cut in Bar Iron prices, and meanwhile the old basis of 1.65c. to 1.70c., Youngstown, holds on the sales as made. A possible advance in the price of Bar Steel may change the situation in favor of Iron. Some of the consumers of Bar Steel have been buying very freely of late and have been trying to cover for the second half, in anticipation of an announcement during the week of higher prices on Steel, but the mills have been declining such orders. In Structural and Plates prompt deliveries are impossible, and jobbers are still selling a good deal of Structural out of stock at premium prices. Meantime there is a perceptible increase in the activity of the various lines of building in the Cleveland territory, with the result that new business is showing up to be placed in the immediate future. The demand for Light Rails has fallen off a little and prices are easier, but the mills are not trying to force sales. There is also a smaller inquiry for standard Rails. Some traction contracts will be let soon, but the business seems slow in developing. The Billet situation is strong, with premiums paid willingly, this material being quoted $27.50 to $28, Pittsburgh. The Sheet situation is stronger all through. Business is good and the mills are taking orders sparingly, accepting no contracts entailing deliveries further ahead than 60 days. The new level of prices makes stock quotations out of Cleveland as follows: Black Sheets, No. 10, 2.10c.; No. 12, 2.15c.; No. 14, 2.20c.; No. 16, 2.30c.; Nos. 18 to 20, 2.45c.; Nos. 22 to 24, 2.50c.; No. 26, 2.55c.; No. 27, 2.60c.; No. 28, 2.70c.; No. 30, 3.10c. Galvanized Sheets, No. 16, 2.95c.; Nos. 18 to 20, 3.05c.; Nos. 22 to 24, 3.20c.; No. 26, 3.40c.; No. 27, 3.60c.; No. 28, 3.80c.; No. 30, 4.60c. Black Sheets in car lots at the mill are quoted: Nos. 22 to 24, 2.10c. as a basis and No. 16 at 1.85c.

Old Material.—The market has been rather unsteady. The dealers have not been able to sell much, and quotations are largely nominal, with developments expected presently, which will greatly change the whole price-list. About the only thing in which there is any trading is Heavy Melting Steel. Quotations are revised, most of them being nominal, as follows, all gross tons: Old Steel Rails, $16 to $16.50; Old Iron Rails, $23 to $23.50; Old Car Wheels, $17; Heavy Melting Steel, $16 to $17. All net tons: Cast Borings, $9 to $10; No. 1 Busheling, $14 to $15; No. 1 Railroad Wrought, $17.50 to $18; Iron Car Axles, $21 to $22; No. 1 Cast, $14.50 to $15; Stove Plate, $11 to $12; Iron and Steel Turnings and Drillings, $12 to $12.50.

The Midvale Steel Company's Annual Meeting.

The annual meeting of the stockholders and directors of the Midvale Steel Company was held February 27, says the Philadelphia *Public Ledger*, and, although the nature of the business transacted is guarded with characteristic secrecy, it is believed to have been one of the most important in the history of the company. The vacancy in the board due to the death of William Sellers was filled by the election of Charles B. Dunn, an executor of the Sellers estate and a member of the firm of Dunn Brothers & Co., brokers. The other members of the board were re-elected, as were the officers of the company. They are: President, Charles J. Harrah; vice-president, James F. Sullivan; treasurer, John C. Dessalet, and secretary, Henry M. Deemer. The directors are Charles J. Harrah, James F. Sullivan, John Sellers, Jr., Charles B. Dunn and Axel A. Petre.

The most important matter discussed by the directors was the enlargement of the armor plate department. Plans for extensive additions are in the hands of the architects, and bids for their construction are expected to be asked in a few days. The inadequacy of the present plant was shown recently in the report of the Board of Naval Experts. The board compiled the following table showing the machinery for armor manufacture at the three plants:

	Bethlehem.	Carnegie.	Midvale.
Open hearth steel furnaces	11	16	6
Forge furnaces	7	8	10
Bending furnaces	4	4	10
Treatment or cementing furnaces	14	16	12
Armor forge presses	3	2	1
Armor bending presses	2	1	1
Oil tanks (tempering)	1	2	1
Oil cooling tanks	1	1	..
Water sprays	2	1	2
Universal drill presses	9	4	1
Universal radial drill presses	..	7	1
Drill presses for test specimens	2	3	..
Portable drill presses	4	..	..
Table planers	8	5	9
Side planers	2	..	..
Cut off planers	2	..	1
Pit planers	2	..	1
Combined 31-foot side and 8-post planer	1	..	..
Rotary planers	4	..	2
Rotary saws (French)	4	5	1
High speed cold saws	..	2	..
Shapers	2	4	..
Slotters	10	7	4
Grinding machines	5	3	..
Portable hand grinders	12	1	..
Universal milling and boring machines	2	3	4
Boring mills	4	1	1
Spiral milling machine for conning tower sight holes (works on inside)	1	..	..
Milling machines for turret sighting hood tops	2	..	..
Scaling machines (pneumatic)	3	7	..
Erecting bed plates	2	1	..
Charging machines for open hearth furnaces	2	4	2

Much of the machinery for Midvale is under construction. Of the six open hearth furnaces, one is building, and of the cementing furnaces three are finished, six nearing completion and three yet to be built. The one armor forge press is 9000 tons. It is to be used for both bending and forging. Those of the two other companies run as high as 12,000 and 14,000 tons. When the ideas of the engineers are carried out the Midvale plant is expected to be able to produce as much armor as either of the plants of its competitors.

The Purchase of the Canisteo Mining Company.

DULUTH, MINN., February 25, 1905.—Negotiations for the purchase of the holdings of the Canisteo Mining Company, Mesaba range, that have been under way for some little time, have been completed, and the tracts held by that company have passed into the hands of the Oliver Iron Mining Company for the United States Steel Corporation. It is the most important purchase of ore lands made in some time and is especially interesting on account of the character of the ores discovered there. The tonnage secured by this deal is very large—more than the total iron ore requirement of the Steel Corporation for some years.

The lands of the Canisteo Company lie entirely within township 56-24, nearer the Mississippi River than any mining that has yet been done, and include a large acreage in sections 20, 21, 22, 29, 30, 31 and 32. In addition to these the Oliver Company some years ago secured the Diamond property, in sections 15 and 22, same township, and a few months ago took a lease on the Arcturus, in sections 13 and 24. Reports have been that the Canisteo Company explored 120,000,000 tons on its lands, but this figure is very much too high. No railroad reaches the township, though the Great Northern's western Mesaba terminus is 7 miles to the northwest at the Hawkins mine of the International Harvester Company. It seems probable that the Steel Corporation will extend its Duluth, Missabe & Northern road to these lands, and to do so will necessitate the construction of about 25 miles of road along the ore bearing formation of the western Mesaba.

The Canisteo proposition is an interesting one from several points of view. The ores are sandy and will require concentration, and contain much paint rock, which cannot be concentrated. It will be necessary to mine nearly 2 tons of raw material to get out 1 ton of clean iron ore. Most of the mining will be underground, for the surface is generally deep, and there will be a large volume of water. The question of the separation of ore and sand is not yet fully worked out, and experiments to that end will be carried on for some time. But they have progressed far enough to show that it is no very serious matter when attacked with ample means. The Oliver Iron Mining Company is already at work and is making extensive preparations for developing the new field.

These mines are in Itasca County, where no mining has yet been done aside from the small output of the Nashwauk district. They lie 7 to 12 miles west from Nashwauk, and the intervening portion of the ore bearing formation has so far not shown any great tonnage of merchantable ores. The effect of this purchase and the activity that will result will be to increase exploration in that whole field, from the Stevenson mine on the east to the Mississippi River on the west, a distance of nearly 30 miles. It is possible that large amounts of ore may be found there that will pay to concentrate for shipment.

The Canisteo Company has been exploring that entire field, and its work resulted in the narrowing of its efforts to the limits of township 56-24, but its preliminary operations may not have been sufficiently thorough to determine conclusively the absence of large bodies of good ore elsewhere. In the township east of 56-24 the Great Northern Road has a large acreage along the ore bearing formation and has carried on some explorations that have discovered ore. It also owns much land adjoining the various Canisteo holdings and which has not been explored. In the town west of 56-24 and to the Mississippi River work has never shown much ore, but it is not improbable that if again undertaken it might be more successful, especially in view of the grade of ore the Oliver Company proposes to utilize by concentration. D. E. W.

The Armor Plate Contracts.

WASHINGTON, D. C., February 28, 1905.—The Secretary of the Navy has finally settled the controversy with regard to the distribution of the armor plate contracts between the Bethlehem, Carnegie and Midvale steel companies. Under the adjustment reached the Midvale Company has surrendered about 600 tons of armor plate for which it entered into contract December 15, 1903, and it will be awarded about 1000 tons, for which bids were opened on January 12, 1905, subject to certain conditions to be prescribed by the Secretary.

Congress Asks for Facts.

The House of Representatives a few days ago passed a resolution calling upon the Secretary of the Navy for a statement of his reasons "for canceling the contract of December 15, 1903, with the Midvale Company and the transferring of the contract at a higher price to another company or companies, and for rejecting the bid of the Midvale Company February 7, 1905, and accepting the bid of other companies at a higher price."

In reply to this resolution Secretary Morton has transmitted a communication from Admiral Mason, chief of the Bureau of Ordnance, which contains some interesting data with regard to the facilities of the armor plate manufacturers of the country, especially with reference to deliveries on short notice. Admiral Mason states that the contract with the Midvale Company dated December 15, 1903, and covering approximately 6180 tons of plate and appurtenances, has not been canceled, but is still in force, except as relates to about 594 tons, which portion of the contract was relinquished by the contractors "in order that the Department might meet the requirements of the ship contractors as regards the date of delivery of such armor."

Board Inspects Plants.

When the bids for armor plate were opened on January 12, 1905, it was found that the Midvale Steel Company had offered to furnish the entire amount required at the lowest price. A board of five officers was appointed to inspect the plants of the competing manufacturers and to make a recommendation as to the awards.

Appeal to the President.

Acting upon the recommendations of the board, the Midvale Company's bid was rejected, and the contract was divided between the Bethlehem and Carnegie companies. This action was very unsatisfactory to the officers of the Midvale Company, and they recently took the matter up with the President on appeal, asserting their ability to provide the armor for which proposals were submitted. The President conferred with the Secretary of the Navy, and after a careful review of all the data furnished by the special board the Navy Department decided to award it about 1000 tons of the new armor.

The award to the Midvale Company embraces those plates which will be last needed in the construction of the ships for which they are intended. The contract will not be let at once, and when signed will provide for its revocation if on March 1, 1906, it shall appear to the Department that the company is not in position to furnish the plates on the dates required. In such event the allotment will be added to the contract of the Carnegie Company, the Bethlehem Company having received orders for the 600 tons relinquished by the Midvale Company under its original contract. W. L. C.

Tropenas Wins a Royalty Suit.—At Reading, Pa., on February 25, Judge Endlich filed an opinion in the equity litigation of Andrew Tropenas of Paris, France, against Andrew Bryson, to recover royalties for the use of a steel process. Mr. Bryson had filed a cross suit. The court decides in favor of Mr. Tropenas, and Mr. Bryson is to account to him for royalties on steel castings he has or should have made from February 28, 1902. The cross suit is dismissed.

The Proposed Southern Iron Merger.

Present indications point toward a successful consummation of the negotiations looking toward the consolidation of the important Southern iron producers. The interests operating to bring this about are working energetically and state that they expect within a few days to be able to make an official announcement of substantial progress.

As the matter stands at present, a consolidation is to be formed, having as a nucleus the Alabama Consolidated Coal & Iron Company, the Sloss-Sheffield Steel & Iron Company, the Tennessee Coal, Iron & Railroad Company and the Alabama properties of the Republic Iron & Steel Company. Other less important interests are to be included later.

J. H. Hoadley, 74 Broadway, New York, is promoting the enterprise. Associated with him are Thomas G. Bush, president of the Alabama Consolidated Coal & Iron Company; J. C. Maben, president of the Sloss-Sheffield Steel & Iron Company, and certain financial interests whose identity has not as yet been officially disclosed. The men mentioned state, however, that these are sufficiently powerful to insure the financial success of the undertaking.

The basis of capitalization proposed for the new company has not been made known, although it is inferred from what has been said by the promoters that the capital will be somewhere in the neighborhood of $200,000,000. This, it is said, will include about $30,000,000 for working capital, of which $25,000,000 is to be set aside for plant betterment and extension. The latter sum is to be spent during a period of five years at the rate of $5,000,000 a year. The most urgent improvements planned include additional blast furnaces, new steel plant, a cast iron pipe plant, the modernization of certain of the properties and the erection of plants for the production of finished materials.

About a month ago the International Power Company, of which Mr. Hoadley is the head, purchased control of the Alabama Consolidated Coal & Iron Company. During the last week Mr. Hoadley and his associates bought all of the common stock of the Sloss-Sheffield Steel & Iron Company, and secured an option on the preferred stock of the company. The common stock was purchased at $125 a share, and is to be deposited with the Central Trust Company of New York, which is to make the payment. According to their option, the purchasers of the common stock are to have the privilege of calling the preferred at 140 and accumulated dividends at any time at 30 days' notice. The holders of the preferred, however, desire to retain it, and the purchasers of the common have given the preferred stock the protection and guarantee which the present holders desire.

The promoters claim to have control of the Tennessee Coal, Iron & Railroad Company by virtue of purchases made recently in the open market. The final consummation of the project is said to now be waiting only the successful issue of negotiations with the Republic Iron & Steel Company, which, according to the promoters, is assured.

New York Pig Iron Warrant Market.

The sales of pig iron warrant certificates on the New York Produce Exchange the past week aggregated 600 tons, of which 200 tons February were sold at $16.70; 200 tons March, $16.70, and 100 tons March, $16.75; 100 tons May, $16.60. The quotations established on call Wednesday noon were:

	Bid.	Asked.
Cash	$16.50	$17.00
March	16.50	16.90
April	16.50	16.90
May	16.60	16.75
June	16.50	16.80
July	16.50	16.90

Eleven Million Dollars for McKeesport.

At the last meeting of the directors of the United States Steel Corporation the expenditure was authorized of $11,000,000 for the remodeling of the McKeesport plant of the National Tube Company. The plans contemplate the remodeling of the present two blast furnaces and the building of a third furnace. The entire rolling mill plant and tube departments are to be rebuilt, and the capacity of the plant will be doubled, increasing it from 850 tons of finished merchant pipe daily to 1700 tons per day.

Iron and Industrial Stocks.

NEW YORK, March 1, 1905.

The week covered since last Wednesday has been one of very great activity in both railroad and industrial stocks, with some of the industrials among the star performers. Thursday and Friday were the days on which the advance in the Sloss-Sheffield, Republic and Tennessee Coal stocks culminated. On Thursday Tennessee Coal sold up to 97¾, Republic preferred up to 87½, Republic common up to 23⅞ and Sloss-Sheffield preferred up to 130. On Friday Sloss-Sheffield common reached 118½. These three companies are expected to figure in the projected Southern merger, and the movement in their stocks was caused by purchases either for control or in the expectation of the realization of still higher prices. All, however, have shown material recessions since Friday. Other Iron and Steel stocks were fairly active and firm during the week, with marked advances in some instances. On Thursday Colorado Fuel sold up to 54, and Can preferred touched 69. Car & Foundry common reached 36¼ on Friday. Locomotive common advanced to 43¾ on Monday. Steel Foundries preferred touched 63 on Thursday. Cast Iron Pipe reached 90 on Tuesday of this week. United States Steel common advanced to 35⅝ on Tuesday, and the preferred to 95⅞. Virginia Iron & Coal, which sold at 43 on Thursday, reached 52½ on Friday. A sharp reaction set in Tuesday afternoon, which carried all prices down considerably under the range which had prevailed on Monday, but some recovery occurred this morning. Last transactions on active stocks up to 1.30 p.m. to-day were as follows: Can common 11½, preferred 67½; Car & Foundry common 34¾, preferred 93¾; Locomotive common 42, preferred 111; Steel Foundries common 15⅝, preferred 61; Colorado Fuel 51½; Pressed Steel common 37⅝, preferred 88¾; Railway Spring common 36½, preferred 97½; Republic common 76¾, preferred 20; Sloss-Sheffield common 105, preferred 125; Tennessee Coal 92½; United States Steel common 35, preferred 94¾, new 5's 94½.

At a meeting of the stockholders of the American Iron & Steel Mfg. Company held in Lebanon, Pa., February 27, the stockholders decided in favor of reducing the common capital stock of the company from $17,000,000 to $2,550,000, and the number of such common shares from 350,000 to 51,000 of the par value of $50.

The Westmoreland Coal Company has absorbed the Penn Gas Coal Company, thus forming the largest gas coal corporation in the State of Pennsylvania. The price paid for Penn Gas stock was $100 per share in cash. There are 30,000 shares, the par value being $50. To pay for them the Westmoreland Company increased its stock from $3,000,000 to $5,000,000 and will borrow $1,000,000 on notes.

The Pressed Steel Car Company has redeemed the $500,000 5 per cent. first mortgage gold notes maturing at this time, leaving outstanding now $3,000,000.

An official of the Crucible Steel Company of America states that the directors have not yet considered the payment of any portion of back dividends on the preferred stock, either in scrip or cash, which on March 31 will amount to 10½ per cent., or $2,625,000.

Dividends.—American Can Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable April 1.

International Silver Company has declared a quarterly dividend of 1 per cent. on the preferred stock, payable April 1.

Alabama Consolidated Coal & Iron Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable March 1.

Railway Steel Spring Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock.

The Laclede Fire Brick Mfg. Company, St. Louis, has just installed in its plant a complete laboratory, which is in charge of A. J. Aubrey, a graduate of the School of Mines, Ohio State University, Columbus. This company manufactures fire brick, cupola blocks, tiles, sewer and culvert pipe, &c., and analyzes all the raw materials entering into the manufacture of its products. Knowing the proportion of the different elements in the materials used the company is in position to guarantee the serviceability of its products.

The Carnegie Steel Company has received a very large order for steel plates to be used in locomotives being built by the Baldwin Locomotive Works, at Philadelphia, for the Japanese Government. These plates are now being rolled at the Homestead Steel Works.

Metal Market.

NEW YORK, March 1, 1905.

Pig Tin.—Business has been only fairly active and the market has continued to ease up somewhat. Although the total shipments for the month showed a decrease, by far the greater quantity of the arrivals came in during the last week or two, proving that the predictions of relief from the scarcity existing earlier in the month were true. While prices declined in this market, they not only failed to do so in London, but on the contrary stiffened up a shade. At the close to-day prices were as follows: Spot, 28.60c. to 28.75c.; March, 28.45c. to 28.75c.; April, 28.42½c. to 28.70c., and May, 28.30c. to 28.65c. The London market shows an advance of 5s. on spot, the quotation to-day being £131 10s., while futures show an advance of 12s. 6d., quoting £130 17s. 6d.

The total statistics for Europe and the United States, as compiled by C. Mayer, secretary of the New York Metal Exchange, show:

	Tons.
Total visible supply February 28, 1905	14,911
Against visible supply January 31, 1905	15,645
Against visible supply February 29, 1904	16,450
Against visible supply December 31, 1904	14,768

Deliveries into consumption during February were good, amounting to 3100 tons. The total for the first two months of this year shows an increase of 1400 tons, compared with the same period of last year.

The combined deliveries for London and Holland for February were 214 tons smaller than last year. For the first two months the increase in deliveries amounts to 704 tons, compared with the same of last year.

Shipments from the Straits for February were 158 tons smaller than for the same month of last year. For the two months of this year the increase in shipments amounts to 184 tons, compared with the same period of last year.

Australia shipped 2 tons more in February, compared with the same month of last year. For the first two months of this year the shipments were 76 tons smaller, compared with the same period of last year.

The total visible supply on February 28, 1905, is 1539 tons below that of February 29, 1904.

Copper.—So far as consuming business here is concerned the market is said to be very dull and prices are nominally unchanged. The principal producers still quote 15.25c. to 15.37½c. for Lake, 15.12½c. to 15.25c. for Electrolytic, and 14.87½c. to 15c. for Casting Copper. The London market shows a slight decline as compared with last week, the closing tables to-day naming £68 5s. for spot, £68 12s. 6d. for futures and £72 for Best Selected. The exports during the month of February amounted to 15,866 tons. Deducting the heavy shipments made to China during the month, Europe is found to have taken a little over 10,000 tons. The exports to Europe since January 1 of this year show a decrease of about 15,000 tons, as compared with the corresponding period of last year. The shipments of Copper to China are regarded in the trade with a good deal of mystery. Speculation is rife as to the cause of such heavy purchases by Chinese consumers, and while at first it was stated that the metal was purchased for coinage purposes, the amount which is known to have been sold is entirely too large to verify this assumption. The latest tip comes from Europe and several metal merchants in this city are inclined to give it credence. It purports that the purchases are entirely speculative and that the Copper will be reshipped to Europe for consumption when conditions in that market are ripe for such a move. The purchases since the first of this year on Chinese account are said to aggregate 40,000 tons, of which thus far this year about 6500 tons have been shipped. It is expected that during this month the shipments will amount to approximately this quantity.

Pig Lead.—The market is quiet, with prices a bit easier, so far as spot stocks in this city are concerned and a shade lower abroad. Demand is only fair, and no new or interesting features have developed. Spot Lead is now quoted at 4.50c. to 4.60c., and St. Louis telegraphs 4.35c. to 4.37½c. The American Smelting & Refining Company still quotes "shipment" Lead on a basis of 4.45c. for Desilverized in 50-ton lots. The London cable announce £12 5s.

Spelter.—This market is dull, although a considerable scarcity of Zinc Ore is reported in the West, and is having an influence on St. Louis prices. At this writing the market is a bit unsettled, quotations here remaining nominally at 6.10c. to 6.20c., while St. Louis telegraphs the metal scarce at 6.10c. to 6.35c. The London market is lower at £24 2s. 6d.

Antimony.—Hallett's is said to be extremely scarce, and quotations are entirely nominal at figures ranging from 7⅞c. to 8⅞c. Cookson's is quoted 7.87½c. to 8.12½c. Other grades are from 7c. to 7.62½c.

Quicksilver.—The market is unchanged, flasks of 75 lbs. being quoted at $40. The London market is quoted at £7 12s. 6d.

Nickel.—The tone of the market is quiet and prices are practically without change, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

Tin Plate.—The situation remains much the same as last week. Prices are firmly held, the American Sheet & Tin Plate Company quoting on a basis of $3.74 a box for 14 x 20 100-lb. Coke Plates, f.o.b. New York, or $3.55, f.o.b. Pittsburgh.

New York.

NEW YORK, March 1, 1905.

Pig Iron.—There has been quite a general and sustained buying movement on the part of the jobbing foundry trade, notably of New England, and a large tonnage in the aggregate has been placed, accompanied by a stiffening in prices. The contract for the Hudson River castings, calling for about 21,000 tons of Pig Iron, was taken by the Bethlehem works. We quote: Northern Iron, tidewater, $18 to $18.25 for No. 1 Foundry, $17.50 to $17.75 for No. 2 Foundry, $17 to $17.25 for No. 2 Plain and $16 to $16.25 for Gray Forge. Alabama and Tennessee Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $17.25 to $17.50 for No. 2 Foundry, with an upward tendency.

Steel Rails.—Among the larger orders placed recently is a lot of 10,000 tons for the Lehigh Valley. We continue to quote $28 for Standard Rails and $23 to $23.50 for Light Rails, 30 lbs. and over.

Cast Iron Pipe.—The market is quiet in this territory. Prices are maintained at $26.50 for 6 to 8 inch Pipe in carload lots, at tidewater.

Finished Iron and Steel.—The leading interest has received a 2500-ton bridge order from a Western railroad company. Business is slower than had been expected from the West and attention is now turning to Eastern railroads, who have very freely expressed their intention to make liberal purchases in the near future. Some of this business may be placed the coming week. The Structural line is not yet very active, the largest contract reported being one for about 1500 tons of additional fabricated work for the Washington Depot of the Pennsylvania Railroad Company. A Pittsburgh company secured a contract for buildings taking 1000 tons to be erected by the American Smelting & Refining Company at Perth Amboy. Work in this line has been slack so long that the bridge shops throughout the country are running on short time, stated to be 30 to 50 hours per week, for the purpose of stringing out employment and keeping their organizations together. The demand for Finished Iron and Steel generally is fair for the season, with indications of a strong demand starting up as soon as the weather becomes a little milder. Soft Steel Bars are up 10c. per 100 lbs. Quotations at tidewater are as follows: Beams, Channels, Angles and Zees, 1.74½c. to 1.84½c.; Tees, 1.79½c. to 1.89½c.; Bulbs, Angles and Deck Beams, 1.84½c. to 1.94½c.; Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine, 1.94½c. to 2.04½c.; Fire Box, 1.94½c. to 2.50c., according to specifications; Refined Bar Iron, 1.74½c. to 1.84½c.; Soft Steel Bars, 1.64½c. to 1.74½c.

Old Material.—The demand has improved somewhat and sales have been made from this market of at least 6000 tons since Saturday. The material sold included 500 tons of strictly No. 1 Railroad Wrought Scrap and Bridge Material at full prices, 1000 tons of Busheling Scrap at full prices, 1000 tons of Wrought Pipe Scrap at a slight advance over previous quotations, 500 tons of Stove Plate at full prices, 2000 tons of Heavy No. 1 Machinery Cast Scrap at a slight advance, and 500 tons of Wrought Turnings and 500 tons of Cast Borings, also at full prices. Inquiries are in the market from three different consumers for blocks of Steel Scrap of 3000 to 5000 tons each. This class of material has been well cleaned up and little is now to be had. Stocks of Scrap generally are low both in first hands and in the various yards of the large dealers. Stocks in consumers' hands are also stated to be running low, as on account of the snow storms during the past month shipments were considerably interfered with. Dealers are expecting consumers to come in more freely within a week or two and claim they will then be obliged to pay higher prices than those ruling to-day. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails	$22.00 to $22.50
Old Steel Rails, rerolling lengths	17.00 to 18.00
Old Steel Rails, short pieces	16.50 to 17.00
Relaying Rails	20.00 to 21.00
Old Car Wheels	17.50 to 18.50
Old Iron Car Axles	22.00 to 23.00
Old Steel Car Axles	19.00 to 20.00
Heavy Melting Steel Scrap	16.50 to 17.00
No. 1 Railroad Wrought Scrap	20.50 to 21.00
No. 1 Yard Wrought Scrap	18.50 to 19.00
Iron Track Scrap	18.00 to 18.50
Wrought Pipe	15.00 to 15.50
Ordinary Light Iron	11.50 to 12.00
Cast Borings	9.50 to 10.00
Wrought Turnings	13.50 to 14.00
No. 1 Machinery Cast	16.00 to 16.50
Stove Plate	13.50 to 14.00

The Engineering Committee of the Panama Canal Commission, consisting of Commissioners Burr, Parsons and Davis, in their report just submitted to the commission recommend the construction of a sea level canal 150 feet wide with a minimum depth of 35 feet, and estimate the cost, including tidal locks, at $230,500,000. They estimate that a sea level canal can be completed within 10 or 12 years.

The Machinery Trade.

NEW YORK, March 1, 1905.

A better feeling again pervades the machinery trade. The lull which characterized the early portion of last month seems to have passed off in most quarters of the trade and orders and inquiries are coming in much more briskly. The effects of the storms seem to be wearing off, so that the trouble over shipments is being eliminated. This has been very serious, causing a great deal of inconvenience to both shippers and purchasers. Some shipments are still untraced which were made as far back as last December. The increased demand is showing itself more particularly on the smaller run of business, indicating that manufacturers generally are augmenting their equipment with a new machine here and there to enlarge their present productive capacity at once. The orders are in almost all cases based upon quick deliveries. Herein lies the benefit to sellers of the general easing up of the recent railroad snarl.

The reports gleaned from machinery merchants generally as to business during the month of February indicate that there was actually a better demand than they gave the month credit for before summing up the results of the entire month. It was a very short month, but, notwithstanding in many cases showed an increase over the business of the month previous. Prices remain unchanged, being firm in most lines.

As the annual reports of the large corporations become public abundant evidence is shown of the intention of these interests to spend money liberally during the present year on plant betterments. Reports of public commissions throughout the country also show that the year will be an active one so far as the execution of municipal State and Government work involving large outlays for machinery and mechanical equipment is concerned.

New York Subway Extensions.

The report of the Committee on Contracts of the Rapid Transmission Commission of New York has just been completed and it will be submitted to the commission at its next meeting. It calls for new subways and elevated railroad extensions for the several boroughs of the city, the aggregate cost of which will reach about $250,000,000. For the Borough of Manhattan the committee has laid out three routes from Harlem to the Battery on the East Side and on the West Side. Four lines extending across the city are suggested in the Bronx, and several extensions to existing subways and elevated stations have been laid out. The three East Side lines have been presented as alternate routes, but the committee expects that it will not be many years before others are built. For the Borough of Queens a subway running from Union square under the East River to Jamaica is planned. Two subway systems are portioned to Brooklyn, one of which will have its terminal at Fort Hamilton. Staten Island, or the Borough of Richmond, has temporarily been omitted, but a spur to Fort Hamilton under the Narrows is suggested as a comparatively easy accomplishment. It explains in its report that it is not intended to construct all these lines at once, its object being simply to map out a comprehensive scheme of new traveling facilities intended to meet all requirements for many years. The plans have been drawn so that each proposed route can be independent, thus admitting bidders outside of the existing corporations. A moving platform is recommended under Thirty-fourth street. It is expected that competition to build and operate the new subways will be keen. It is expected that in several instances bidders will agree to build the routes with their own capital. John W. Gates and others behind the Port Chester Railroad Company have already offered to construct a subway under Third avenue from Harlem to the Battery at their own expense. This route is one of those suggested by the committee. Out of its present margin of debt incurring capacities the city has set aside $50,000,000 for new subways. This report is of considerable importance, inasmuch as that it brings to a focus the subject of subway extension, which has already become a vexatious problem. With the approval of the Rapid Transmission Commission work will doubtless be commenced on several of the lines immediately. This, of course, will involve a very large expenditure for machinery equipment.

The Hudson Companies, 15 Wall street, New York, a corporation identified with the New York & New Jersey Railroad Company, or what is more commonly termed in the trade, the McAdoo tunnel interests, has just placed a contract with the Bethlehem Steel Company for about 25,000 tons of machine castings, which will take the form of segments for tunnel tubes to run underneath the Hudson River. As this is the first contract for work of this nature which has been captured by the Bethlehem Company, it is expected in the trade that orders will soon be forthcoming from this quarter for special machinery to be used in finishing the castings. A portion of the work is destined to be used in the tunnel now under construction, and, in fact, almost completed, crossing the Hudson River at the point between Christopher street, New York, and Hoboken, N. J. A large portion of the castings will, however, be used for the proposed tunnel which is to run from Jersey City to the foot of Cortlandt street, New York. Preliminary operations have just been commenced at Jersey City near the Pennsylvania Railroad terminal, and work will soon be started on the shaft at that point. Contracts have just been placed for the boilers and turbo generators and air compressors to be installed in the power plant to be used in connection with the work of constructing the tunnel. Other purchases will be made from time to time as the work proceeds. Permanent organization of the Hudson companies was effected about two weeks ago by the election of the following directors: Walter G. Oakman, William G. McAdoo, William Barclay Parsons, John W. Simpson, William C. Lane, Frederick B. Jennings, Anthony N. Brady, Andrew Freedman, Gardiner M. Lane, Cornelius Vanderbilt, Pliny Fisk and William M. Barnum. The board subsequently organized by electing the following officers: President, Walter G. Oakman; chief engineer, J. Vipond Davies; consulting engineer, William Barclay Parsons; treasurer, Henry A. Murray; secretary, Kenyon B. Conger. An Executive Committee was also elected, consisting of Walter G. Oakman, William G. McAdoo, Andrew Freeman, Pliny Fisk and William M. Barnum. At this meeting yesterday the Board of Aldermen granted a franchise giving the New York & New Jersey Railroad Company the right to build a subway at Sixth avenue, New York, from Christopher to Thirty-fourth street and crosstown through Ninth street. This will be operated in conjunction with the uptown tunnel underneath the Hudson River. The Cortlandt street tunnel is to be connected with the interborough tunnel by means of an underground foot walk.

The contract for the compressed air power plant, to be used in driving the second pair of trolley tunnels under the Hudson River, has been awarded to the Ingersoll-Sergeant Drill Company, which company has furnished all the compressors for subaqueous tunnel work in New York and vicinity. These tunnels, which are popularly known as the Cortlandt Street Tunnels, for the reason that their New York terminal will be located on that street, are to be built by the Hudson Companies, of which Chas. M. Jacobs is the chief engineer. The shield method of subaqueous tunneling will be used. The order includes five duplex air compressors. Three are low pressure class "H" machines, with steam cylinders 14 and 28 inches in diameter, air cylinders 22¼ inches in diameter and 16-inch stroke, with a maximum air pressure of 50 pounds per square inch and a capacity of 1850 cubic feet of free air per minute each. The other two are class "HC" machines for high pressure, with steam cylinders 14 and 28 inches in diameter, air cylinder 24¼ and 14¼ inches in diameter and 16-inch stroke, with a maximum pressure of 125 pounds per square inch and a combined capacity of 2000 cubic feet of free air per minute. This makes 38 Ingersoll-Sergeant air compressors with a total capacity of 117,234 cubic feet of fre air per minute, now used in building the various tunnels under the Hudson and East rivers.

From the annual report of the Pensylvania Railroad Company submitted yesterday we quote the following, which is of interest to the machinery trade through its bearing upon contemplated work involving large expenditures for mechanical equipment:

The main items of expenditure during the current year upon your main line will be the construction of the elevated freight road along Duquesne Way and of the new freight station at the Point in Pittsburgh, the extension of the four-track system on the Monongahela Division and of second track and sidings in the coke region, the further completion of the four-track system on the Pittsburgh and Middle divisions and the work upon the new freight line between Columbia and Glenloch. Large additions will also be required to your motive power and equipment, and necessary provision must be made for a permanent water supply for your main line. Serious delay has already resulted in the handling of traffic on your Pittsburgh Division from the insufficient amount and bad quality of the water that was obtainable during the recent drought in that district. The tunnel line into New York is now under active construction. Contracts have been awarded for the two tunnels under the North River between the Weehawken shaft in New Jersey and the east side of Tenth avenue, New York City; for the excavation and retaining walls for the terminal passenger station between Seventh and Ninth avenues in that city and for the four tunnels under the East River to East avenue in Long Island City. The remaining tunnel work, under Bergen Hill on the west side of the North River and in New York City east of the station, will be put under contract during the current year, as also the terminal station itself, and it is expected that the entire line will be ready for traffic in the fall of 1908. A large power house is almost completed in Long Island City and another will be erected on the west side of the North River, which will have sufficient capacity to supply not only the power sufficient for the operation of the tunnels, but also for that portion of the Long Island Railroad System in and adjacent to the City of Brooklyn, which is now being equipped for electric service.

Extensions of American Smelting & Refining Company.

We have just received further details concerning the extensions to be made by the American Smelting & Refining Company. The first work to be undertaken will be at Perth Amboy, N. J., where a new power house to contain about 1000 horse-power equipment will be built. A castings house and a warehouse will also be added to the white lead department, which is operated under the name of the United States Lead Company, a subsidiary company. Contracts for the buildings have been awarded to the Riter-Conley Mfg. Company, Pittsburgh. Other extensions at Perth Amboy, to be made to the Guggenheim copper smelting plant and to be completed this year, will involve an expenditure of about $250,000. Plans for this work have not yet been completed. Orders have been given to the engineering department to proceed immediately with the plans for a new copper smelter and a lead smelting plant to be erected in northern Mexico. For the erection of these plants between $1,000,000 and $1,250,000 has been appropriated. This work is also scheduled to proceed during the present year. It is expected that it will be several weeks, however, before the plans are advanced sufficiently to warrant the purchase of any equipment. Herbert W. York, chief engineer of the company, and W. A. Allen, constructing engineer, both having their offices at 71 Broadway, will be in charge of the new work.

The Seamless Rolled Steel Pipe Company, whose offices are located at Philadelphia and works at Chester, Pa., has issued plans and is asking estimates on two buildings to be 50 x 273 feet and one building to be 50 x 105 feet. These buildings are to be equipped for the manufacture of seamless rolled steel pipe under a new process. The company is also asking for prices at present on a twin reversible engine, 28 x 42 inches, for handling rolls, and will install a mill for the rolling of 20-inch pipe. Plans are also being prepared for a steel converting plant and heating furnaces. W. H. Green, Jr., vice-president and general manager, is in charge.

The Ball & Wood Company, steam engine builder of Elizabeth, N. J., is adding a new department to its business, that of flange welding and pipe bending. The increasing use of high pressure and superheated steam has developed the need of pipe joints which are absolutely reliable, and in the process the company is bringing out the use of forged steel flanges welded to the pipe will eliminate two weak spots out of three in every steam joint, the pipe and flange being made homogeneous. Contracts have been let for a new smith's shop at the Ball & Wood works for the purpose of doing this work, and it is expected shortly to be in full operation. O. M. Jones has resigned his position in the New York sales office of the National Tube Company and become the manager of the new department of the Ball & Wood Company, and expects to fill the requirements of contractors and engineers, although it is not the intention of the company to enter the contracting field. For information regarding this work letters should be addressed to the Ball & Wood Company, Welding Department, 17 Battery place, New York.

Machinery is being purchased by the Detroit Steel Casting Company, Detroit, Mich., to replace that lost in the fire which recently destroyed its plant. The company has placed an order with the Northern Engineering Works, Detroit, for the electric traveling cranes, of which there will be one 30-ton four-motor crane and two 10-ton three-motor cranes, all 70 feet span. The Northern Engineering Works has also secured a contract from the Michigan Malleable Iron Company for one 5-ton, three-motor special electric traveling crane.

Power Plant Equipment.

The Birmingham Railway, Light & Power Company, Birmingham, Ala., will spend $200,000 in improvements to its power plant, which will include the purchase of mechanical stokers, coal conveyors and coal bins, one 3000-kw. turbine generator, relay the South Bessemer car line, build new freight and passenger station at Bessemer and lay 7 miles of new gas mains.

The Electric Storage Battery Company, Philadelphia, has been awarded contract by the New York Central Railway for work aggregating about $900,000. The contract calls for the equipment of several power houses with electric storage batteries for use in operating the New York Central's trains in and out of New York, and it is expected that additional contracts for storage batteries will soon be awarded in connection with this work.

Contracts have been awarded by J. G. White & Co., 49 Exchange place, New York City, for the principal equipment to be installed in an extension to the new power station of the Manila Street Railway & Lighting Company, Manila, P. I. Babcock & Wilcox boilers will be installed and Westinghouse turbo generators will be used. The contract for the condensing equipment was awarded to the Alberger Condenser Company. This will consist of a surface condenser having 6000 square feet capacity and a two-stage dry vacuum pump and centrifugal circulating pumps.

In connection with the electrical plant to be erected at Dawson City for the operation of gold dredging boats on the Alaskan rivers a contract has been awarded to the Alberger Condenser Company for a surface condensing plant. This is to be installed in conjunction with the Westinghouse turbo generator plant which we referred to in our last issue.

The Canada Car Company, Limited, Montreal, P. Q., has placed an order with the Alberger Condenser Company for a dry vacuum condensing system and a number of boiler feed pumps to be operated in connection with the main power plant of the new works. A special jet condenser will also be installed for operating with the air compressor plant. As we have previously noted, the Babcock & Wilcox Company has secured a contract for the boilers and the Canadian General Electric Company was awarded the order for the turbo generators.

Machine Tool Items.

An interesting piece of gossip has just leaked out which is receiving considerable comment in machine tool districts. It is to the effect that Chas. A. Moore of Manning, Maxwell & Moore resigned from the directorate of the Niles-Bement-Pond Company at the last meeting of the company, which was held about a month ago. At the office of the Niles-Bement-Pond Company this report was confirmed and it was said that no one was chosen to fill the vacancy on the board.

An addition is to be built to the machine shop of the Midvale Steel Company at Nicetown, Philadelphia, Pa., and while nothing official can be learned at this time as to the use to which the extensions will be put, it is believed in the trade that additional armor plate making equipment will be installed.

The machine tools which the New York, New Haven & Hartford Railroad has been in the market for during the last few weeks have just been purchased. We understand that the major portion of the order went to Manning, Maxwell & Moore, the Prentiss Tool & Supply Company, Hill-Clarke & Co. and the Niles-Bement-Pond Company, also sharing in the work.

The General Electric Company has purchased a fair sized lot of tools for its plant at Schenectady from Manning, Maxwell & Moore.

A number of machine tools for installation in the Baldwin Locomotive Works were purchased from several dealers in the street. Manning, Maxwell & Moore received a substantial order in this connection.

The New England Machinery Market.

WORCESTER, MASS., February 28, 1905.

The demand for machine tools has not changed either for better or worse during the past week. The slight lull in business is more prolonged than had been anticipated, and the dealers and those manufacturers who are affected have about made up their minds that the present condition will continue until the weather changes and there comes the impetus of spring.

The Rawson & Morrison Mfg. Company, builder of engines and machinery, Cambridge, Mass., has purchased the land and buildings formerly occupied by the Damon Safe & Iron Works, Cambridgeport, not far from the Rawson & Morrison plant. The property comprises 28,000 square feet of land, almost the whole of which is occupied by a one-story monitor roof shop, with a two-story office building at the front. The new owner will occupy the premises as an addition to its present plant, which will be continued. It is understood that considerable new equipment will be required. The Damon shops were occupied until recently by the Crest Automobile Company, which has gone out of business.

The Hart & Cooley Company, manufacturer of wrought steel registers, New Britain, Conn., has been granted permission by the Connecticut Legislature to increase its capital stock from $100,000 to $250,000 and has voted to make the increase. The purpose of the new capital is to increase the business. The new building now under process of construction will take care of the growth for a few months. Other additions will be made as the demand warrants.

The Tiverton Gas Company, Tiverton, R. I., has been organized to furnish the town with acetylene gas and is in the market for a 4000 cubic feet gas holder, 7½ miles of pipe for distributing the illuminant, and the building materials and other articles that go into the construction and equipment of a gas plant. The capital stock of the company is $50,000. The president is Richard Barker; clerk, Lawrence L. Holden, and treasurer, William Hindle, all of Tiverton.

The Osgood Machine Company, 104 Portland street, Boston, has established a new machine shop at 421 Medford street, Charlestown, and will do a general millwright and

machine business, including the manufacture of conveying, elevating and power transmission machinery, grist mills and fertilizer and disintegrating machinery. The company is a new Massachusetts corporation, with capital stock of $10,000. Henry E. Osgood is the president and Frank F. Fitts, treasurer and clerk. Mr. Osgood was formerly with the Holmes & Blanchard Company.

The Williams Bros. Mfg. Company, Glastonbury, Conn., is enlarging its factory by putting two additional stories on its forge shop, which is at present a one-story stone building. The two new stories will be of brick with outside stairway and elevator shaft. The floor area of the building is 40 x 80 feet. The new space will be devoted to polishing work in spoon manufacturing and for finishing knives.

Wilson & Smith, metal punchers, Worcester, Mass., are to erect a new shop, 50 x 100 feet, and two stories.

Charles S. Dexter has opened a shop at 15 Bailey street, Attleboro, Mass., for the manufacture of power presses, jewellers' tools, lap heads, polishing heads, grinding heads and special machinery.

H. T. Frisbie and others, Houlton, Maine, have purchased the Varney mill property and water privilege at Forest City, Maine, and the falls at Mud Lake, giving a total fall of 54½ feet, which assures a constant energy of 1200 horsepower. The plan of the purchasers is to establish an electric plant to provide lights and power for Houlton, probably this season.

The Glastonbury Power Company, Glastonbury, Conn., is to build its electric power station this season, the financial assurance having been obtained by the sale of the company's securities. The new dam and power station will cost $175,000. It is expected that about 4,000,000 kw. hours will be developed per annum. The primary purpose of the plan is to furnish power for a new street railway to be known as the South Glastonbury & South Manchester, which will be 11 miles in length. The officers of the power company are: President, James S. Williams, who is the vice-president and treasurer of the Williams Bros. Mfg. Company; vice-president, Henry S. Goslee; secretary and treasurer, Lewis W. Ripley; directors, D. W. Williams, J. H. Hale, H. S. Goslee, F. A. Griswold, J. S. Williams and L. W. Ripley, all of Glastonbury.

The Philadelphia Machinery Market.

PHILADELPHIA, PA., February 28, 1905.

Business conditions have been somewhat more active in the Philadelphia market during the past week, and there is a more hopeful feeling throughout the trade. Both manufacturers and dealers have taken on more business than during the early weeks of the month, and while orders have not been for any large number of tools sales of small lots in scattered localities and for several small shop equipments are to be noted. Some local concerns have received orders from the various railroads, notably from the Lehigh Valley, which have aided materially in their total sales for February. Inquiries are reported good, but in nearly all lines are said to be slow in coming to the point of actual business. Considerable interest is taken in the announcement of the proposed increase in motive power and rolling stock by the Baltimore & Ohio Railroad, the total cost of which is estimated at $13,000,000; specifications covering these requirements, some of the large producers advise us, are expected out in a very short time. Specifications for new equipment for the proposed additions to the plant of the Eastern Steel Company, Pottsville, Pa., have also been recently submitted to the trade, while some other large requirements, now held in abeyance, are expected to be out before very long. Weather conditions have been more favorable during the week for outside work, and propositions for such operations, which have been temporarily held up, are now coming up for consideration. This class of work, when it once gets going, will aid the machinery trade to a great extent, and is being looked forward to with interest. Manufacturing plants continue busy in varying degrees, some of the larger plants have good orders ahead, while others are less favored. The smaller plants average only about fairly well.

The Eastern Steel Company, Pottsville, Pa., has furnished specifications for quite a lot of machinery and tools required by the proposed extension of its plant. Among articles mentioned are: Ten 5-ton, 12 3-ton and 3 15 or 20 ton electric cranes and runways; a large number of pneumatic riveters, punches, shears, boring machinery, milling saws, plate planers, screw cutting machines, rivet machinery, drills, both radial and post, plate straighteners, gantry reamers and various other tools.

Plans have been prepared and bids submitted for the erection of a one-story extension to the machine shops of the Pennsylvania Railroad at Renovo, Pa. Plans call for extensions to both the erecting and machine shops, their general dimensions being 80 x 280 and 80 x 260 feet. The proposed buildings are to be built of brick and steel. No final action has as yet been taken on the bids.

J. K. Petty & Co., the Lebanon Boiler Works, Lebanon, Pa., have become incorporated under the name of J. K. Petty & Co., Inc. D. O. Mader is president and J. K. Petty, secretary and treasurer. Mr. Mader will continue as heretofore in charge at the works, while Mr. Petty will maintain the Philadelphia branch at 206 North Fourth street in that city.

Director Shoyer of the Department of Supplies for the city of Philadelphia has awarded contracts for furnishing iron pipe to be used during the current year in extending the water system to the Camden Iron Works, Camden, N. J., and the Donaldson Iron Works, Emaus, Pa. One hundred thousand dollars was appropriated by the City Council for this purpose, but it is said that fully as much more will be required to meet the demand for water extension.

The Baldwin Locomotive Works has taken orders for 20 engines for the New South Wales Government railways. They are of a composite type suitable for both freight and passenger traffic. The contract for these locomotives was obtained in competition with English, French and German builders, and deliveries on same must be made during May and June. A number of other orders for small lots of engines have been received and future business conditions are said to be very encouraging.

Hoopes & Townsend of this city have sold to the B. F. Shaw Company, Wilmington, Del., the large manufacturing plant formerly occupied by them in that city. The consideration was $25,000. The Shaw Company, which manufactures steam supplies, &c., will, it is said, consolidate its various plants at the new location.

W. J. Linton, manager for Wickes Brothers, who have recently established a local branch of their business in this city with offices in the Bourse Machinery Hall, reports a very satisfactory business during the past month. While they have been largely engaged in getting acquainted with the trade, some good sales have been made and other very satisfactory propositions are under consideration. During the last week they have closed with N. Z. Graves for the installation of an electric lighting plant and have received an order from the Pennsylvania Salt Mfg. Company for a heavy electric locomotive.

The Tabor Mfg. Company, Philadelphia, reports a very satisfactory increase in business during the past month. The recent demand for molding machines has been largely from the New England and Middle States, there has been some foreign sales and a fair local demand. Among others, orders have been received for a 36-inch square and an 18 x 28 inch machine from the American Locomotive Company, the former for its Schenectady and the latter for the Dunkirk plant. Murray & Co., Dallas, Texas, 7-inch power ramming machine, with vibrator frame, flasks, &c.; also a 14 x 16 and an 18 x 22 inch split pattern machine, to be used on cotton machinery castings; United Shoe Machinery Company, Beverly, Mass., two 13 x 20 inch split pattern, two 24-inch square, Draper, and one 7-inch power ramming machine; H. Mueller Mfg. Company, Decatur, Ill., a 16-inch power rammer and a 12 x 14 inch new duplex power squeezer. Three machines have recently been shipped to the International Steam Pump Company for its new plant at Harrison, N. J., and a 20 x 30 inch single and a 13 x 20 inch duplex machine have been shipped to Paris, France, for use in automobile work. Tabor-Newbold cold saws, also manufactured by the Tabor Company, have been exported to Manchester, England, while deliveries of various size saws, to Schaum & Uhlinger, Philadelphia, Diamond Drill & Machine Company, Birdsboro, Pa., and the Reading Iron Company, Reading, Pa., have been made.

Cincinnati Machinery Market.

CINCINNATI, OHIO, February 28, 1905.

A fair condition of trade prevails, and most of the plants report quite a decided increase over the figures of a month previous. Certain tools appear to be in much greater demand than others, and such are finding a ready market. Weather conditions have, to a large extent, had an important influence on the present state of affairs, and have caused a halt in what otherwise would certainly have been far above the average. The builders of lathes are probably among the most busy in the line of tool makers, and claim to have their order books well filled. Manufacturers of milling machines are probably next in line as to volume of business being handled, and to date report a very satisfactory month. The activity in millers is largely due to the expansion in the automobile industry, both at home and in foreign countries, especially France. The makers of radial drills are said to be only fairly busy. A very large proportion of their trade comes from the railroads, who up to the present time have come into the market for only a limited amount of equipment. One manufacturer, in speaking of the delay among the railroads, said that last month they completed their contract with one of the trunk lines that had been on the tapis since 1903. The trade in shapers is also opening up, and the plants of the city have contracts recently made that clearly indicates a revival along this line. Builders of upright drills report more *bona fide* inquiry than for some months. They say that foreign demand is on the increase.

and that conditions are very much improved generally. Some time since mention was made in these columns of a competitive test as to the relative merits of concrete and iron to stand fire when used in the construction of buildings. The architect having the matter in hand has had the necessary plans and specifications in readiness for some months, and has been waiting for the concrete builders to post the necessary forfeit, which to date they have failed to do. It appears that they are unwilling to use materials that are obtained in this section, but insist that an especial fire proof cement coming from Germany only shall be obtained with which to make the proposed test. The matter will be held in abeyance until a satisfactory conclusion shall be reached.

The Industrial Bureau is making strenuous efforts to establish in Cincinnati a steel casting plant—a machine tool plant and an automobile manufactory. The project is being pushed by several of the prominent machine tool builders, and if all the conditions are satisfactory, the necessary funds to carry out the project will be forthcoming. This contemplates the erection of an up to date foundry with all its accessories. Negotiations are not yet fully completed, but the indications are that it will be hurried forward to a successful termination.

The John Steptoe Shaper Company has found it necessary to commence working overtime and the men will now make 60 hours per week. This is deemed necessary to fully provide for the excess of orders that the company is receiving especially from foreign sources. It is now completing one of its 16-inch machines for Milan, Italy; a 20-inch machine for Stockholm, a 28-inch machine for Goteberg, Sweden, and three 14-inch and three 16-inch machines that are to be shipped to London. In addition to these orders there is one for two 16-inch and one 14-inch shaper for direct shipment to Tokio, Japan. In this connection we might observe that the company received a letter from the superintendent of the Imperial Chinese Railway, at Canton, China, in regard to one of its shapers that has been in service for many years and which it had practically forgotten. It appears from this letter that all the tools in the shops of the Imperial Railway are handled by Chinese workmen, and it is necessary that the mechanism be very simple to enable them to understand it.

The G. A. Gray Company has increased its capital stock from $100,000 to $300,000. The present issue is all common stock, but the new issue will be $160,000 common and $140,000 6 per cent. cumulative preferred. The Iron Castings Company, a $50,000 company and one in which Mr. Gray is largely interested, will become a part of the G. A. Gray Company.

The Lodge & Shipley Machine Tool Company says that it is now working overtime and is away behind in its orders, due largely to the delays experienced in securing castings. In addition to this, the company advises that it attributes the increased demand for its tools to the fact that its new patent head has met with unparalleled success and is quite a trade catcher.

The Cincinnati Milling Machine Company is very busy. The automobile plants throughout the country that are springing up have made a ready market for its tools and made it necessary for it to increase its output considerably.

The Platt Iron Works, Dayton, Ohio, has made a mortgage to the Cincinnati Trust Company to secure $800,000 bonds.

The Lagonda Mfg. Company, Springfield, Ohio, recently received an order from Tokio, Japan, for quite a large shipment of boiler tube cleaners. Sample machines had been sent some time previously and this order was the result of the satisfactory manner with which they did the work.

The Bickford Drill & Tool Company, while busy, advises that trade has not assumed the proportions that could reasonably have been expected at this season of the year. The purchases of the railroads is a very important factor in the sales and they have been exceedingly slow in letting contracts for tools. Foreign demand is said to be somewhat improved and a more hopeful feeling is entertained from the fact that the company is receiving numerous inquiries by wire indicating that purchasers have about reached the end of their negotiating and are apparently ready to close.

A new water works and electric light plant is to be installed at Loveland, Ohio.

The Republic Iron & Steel Company is considering plans for the building of mills at Youngstown, Ohio, for rods and wire products, but nothing definite has as yet been determined. The new rail mill being built by the company is being pushed actively and will be ready for operation in about three months. It is an interchangeable mill and will roll either rails, sheet or tin bars.

J. A. Rawlins of Naylor & Co., New York, sailed for Europe March 1 on the Baltic.

Cleveland Machinery Market.

CLEVELAND, OHIO, February 28, 1905.

A touch of warmer weather after the recent cold spell has made it possible for building operations to commence and machinery dealers say that business is improving. One leading dealer states that business last week was 30 to 40 per cent. better than it has been any week thus far this year. There are a number of new projects in sight, but the demand comes primarily from those who are enlarging their shop equipments. Altogether the prospects for a good spring are most encouraging.

Wheeling & Lake Erie Improvements.

The Wheeling & Lake Erie Railway Company has placed contracts for a portion of the machine shop equipment for Canton referred to in the last issue. An order aggregating 20 machine tools, forges, blowers, &c., was placed with the Niles-Bement-Pond Company. These will be delivered as soon as possible, as it is the intention to do considerable locomotive overhauling at Canton this spring. A number of other tools will be purchased in the near future. Newspaper reports state that the company is planning to increase the capacity of its shops at Massillon, Norwalk and Zanesville. This is declared by officials of the company to be untrue, as it is the intention to concentrate much of the work at Canton. This company, which is a part of the Wabash system, is preparing to make important improvements at its Huron terminals. It is the intention to increase the size of the present slip and install a car dumping coal handling machine. It is also the intention to increase the ore handling facilities by the erection of six legs of fast clam shell conveying outfits for use with the largest type of ore vessels. The improvements at this point will cost about $500,000.

Power and General Machinery Requirements.

The Board of Public Service is calling for bids for a fire proof building to contain 8000 square feet for a garbage reduction plant. The machinery will include digesters, dryers, presses and perculators. Two additional boilers will be installed later.

The Standard Brewing Company is preparing to erect a new brewery in this city. Mueller & Mildner of Detroit, the engineers, have placed contracts with the National Iron Wire Company, Cleveland, for structural work, and with Murphy & Donnelly, Cleveland, for boilers. A 100 horse-power engine, lighting plant, air compressor and refrigerating plant are to be ordered in the near future. Charles Renz is president and S. S. Creardon general manager, Cleveland.

E. H. Dyer & Co., Cleveland, sugar beet machinery, have the contract for the erection of a 600-ton beet sugar plant at Blissfield, Mich., for the Continental Sugar Company, Cleveland. The plant will cost about $500,000. Contracts are being placed for the boilers and other machinery, and a complete machine shop equipment will be installed to take care of repairs.

Prof. B. F. Thomas, Ohio State University, Columbus, Ohio, has prepared plans and specifications for a power plant, to be erected at the Dayton State Hospital, Dayton, Ohio. Bids will be received until March 23 for furnishing and erecting one battery of water tube boilers with automatic stokers, coal conveying and ash handling machinery piping, tunnel and pipe covering.

The Cheswick Mfg. Company, who recently purchased the plant of the Structural Steel Car Company, at Canton, is receiving its machinery from Pittsburgh, and will install some additional. It is expected that the plant will be in full operation by April 1. Roll cutter blades and harrow disks will be part of the output.

The Middlefield Mfg. Company, Middlefield, Ohio, has been organized with C. M. Pierce, President; C. E. Lampson, vice-president; F. B. Hubbard, superintendent; C. D. Hoskins, secretary, and W. E. Norris, treasurer. The company is equipping a plant for the manufacture of an improved hot air engine, the invention of F. B. Hubbard. The company expects to be in operation within 30 days.

The Akron Mfg. Company, Akron, has increased its capital stock from $30,000 to $50,000, and it is preparing to increase its facilities for manufacturing tin, brass and sheet metal articles. Some new lines will be produced.

The plant of the Standard Motive Power Company, Canal Dover, Ohio, was offered for sale last week by H. H. Hostetler, receiver, but there were no bidders. The plant was appraised at $29,400 and consists of 59 acres of land, four large brick and steel factory buildings, office building, foundation for additional buildings, railroad tracks, &c., the plant having been designed for the company mentioned, but never occupied. We are informed that the plant has been reappraised at $17,000 and will be offered for sale at New Philadelphia, Ohio, March 18.

Eugene Abbott, formerly of Cleveland, has formed a company at Painesville, Ohio, for the manufacture of electric time switches and other electrical devices and eave trough hangers. He has arranged for a factory and is installing machinery.

A. Bentley & Sons, Toledo, have taken the contract for

the erection of the 16-story Nicholas Building for Spitzer & Co., that city. The building will be of steel skeleton frame, and a contract has been placed with the Donovan Wire & Iron Company, Toledo, for 2500 tons of structural and ornamental iron work. The Winters Electrical Company, Toledo, will furnish the electrical equipment; Bissell & Co., Toledo, the generators, and the National Supply Company, Chicago, the fire proofing.

Wm. Taylor, Sons & Co., wholesale dry goods dealers of this city, are having plans prepared by J. Milton Dyer, Cleveland, for a large fire proof building and arcade to extend from Euclid avenue to Prospect street. A large amount of structural iron will be required and a power plant will be installed.

T. H. Brooks & Co., Cleveland, have secured the contract for structural work for a nine-story fire proof building for the Young Women's Christian Association of Cleveland. It will have elevators and lighting plant. Levi T. Schofield of Cleveland is architect.

The American Shipbuilding Company has commenced closing contracts for 1906 delivery. The first order was from Capt. C. L. Hutchinson for a 9000-ton ore steamer, which will be built at Lorain. She will have triple expansion engines, cylinders 22½, 36 and 60 inches, with 42-inch stroke. She will have Scotch boilers designed for 180 pounds steam, and fitted with Ellis & Eaves draft. A contract has been closed with the Bessemer Dock & Navigation Company for a twin screw car ferry to come out next October. She will have two sets of triple expansion engines; cylinders 19, 31 and 52 inches, with 36-inch stroke. Steam will be furnished by four Scotch boilers, allowed 175 pounds pressure. She will be built in Cleveland, and will cost $350,000.

Government Purchases.

WASHINGTON, D. C., March 1, 1905.

Bids were opened at the Bureau of Supplies and Accounts to-day for machine tools, as follows:

Bidder 1, Atlantic Works, Incorporated, Twenty-eighth street and Gray's Ferry road, Philadelphia, Pa.; 2, American Wood Working Machinery Company, 136 Liberty street, New York City; 3, American Ship Windlass Company, Providence, R. I.; 6, Baldwin, Tuthill & Bolton, Grand Rapids, Mich.; 7, Brown & Sharpe Mfg. Company, Providence, R. I.; 12, Bentel & Margedant Company, Hamilton, Ohio; 15, Buffalo Forge Company, Buffalo, N. Y.; 16, Camden Iron Works, Camden, N. J.; 17, Crocker-Wheeler Company, Ampere, N. J.; 21, H. P. Copeland, 339 Greenwich street, New York City; 24, Crescent Machine Company, Leetonia, Ohio; 25, C. & C. Electric Company, 143 Liberty street, New York City; 32 Drew Machinery Agency, Manchester, N. H.; 33, D'Olier Engineering Company, 121 S. Eleventh street, Philadelphia, Pa.; 39, Fairbanks Company, 314 North street, Baltimore, Md.; 41, A. D. Granger Company, 95 Liberty street, New York City; 47, General Electric Company, Schenectady, N. Y.; 49, Holtzer-Cabot Electric Company, Brookline, Mass.; 51, Handlan-Buck Mfg. Company, 210 N. Third street, St. Louis, Mo.; 53, Hendey Machine Company, Torrington, Conn.; 62, Ingersoll Milling Machine Company, 114 Liberty street, New York City; 67, Keuffel & Esser Company, 127 Fulton street, New York City; 69, Wm. H. C. Lee, 39 Cortlandt street, New York City; 76, Manning, Maxwell & Moore, 85 Liberty street, New York City; 79, Niles-Bement-Pond Company, 136 Liberty street, New York City; 80, Oliver Machinery Company, Grand Rapids, Mich.; 81, Prentiss Tool & Supply Company, 115 Liberty street, New York City; 83, George Place, agent, 120 Broadway, New York City; 87, Platt Iron Works Company, Dayton, Ohio; 94, H. B. Smith Machine Company, Smithville, N. J.; 97, Springfield Mfg. Company, Bridgeport, Conn.; 99, Sherman-Brown-Clements Company, 55 Dey street, New York City; 100, Smith-Courtney Company, Richmond, Va.; 106, Royce & Ricketts, Washington, D. C.; 107, Thresher Electric Company, Dayton, Ohio; 112, John D. Westbrook, Norfolk, Va.; 114, Henry R. Worthington, 114 Liberty street, New York City.

Schedule No. 63—Bureau of Yards and Docks.

Class 1. Washington—One screw cutting engine lathe—Bidder 39, $470; 53, $510; 76, $528; 79, $495; 106, $475.

Class 2. Washington—Three motor driven centrifugal pumping sets—Bidder 15, $2950; 16, $2800; 17, $3457; 21, $3370; 25, $2697; 33, $2680; 41, $2818; 67, $2285.63 and $2420.63; 69, $3232; 87, $3255; 114, $3234.

Class 3. Norfolk—One motor driven full universal radial drill—Bidder 39, $1865; 79, $1600; 100, $1519; 106, $1200; 112, $1870.

Class 4. Pensacola—One hand planing and surfacing machine—Bidder 1, $292; 2, $280; 12, $275; 32, $242.80; 76, $263; 80, $298; 81, $269; 83, $265; 94, $257.

Class 5. Pensacola—One tilting table band saw—Bidder 1, $230 and $245; 2, $235; 12, $240; 24, $165, $205, $225 and $260; 32, $215; 76, $203; 80, $251; 81, $222; 83, $211; 94, $170; 100, $253.75.

Class 6. Pensacola—One automatic knife grinder—Bidder 2, $230; 6, $132; 51, $290; 76, $167; 80, $221 and $333; 81, $231; 97, $180.50; 100, $216.01 and $226.01.

Schedule No. 64.—Bureau of Construction and Repair.

Class 7. Boston—Two electric deck winches—Bidder 47, $2654; 49, $3235; 107, $3300.

Class 8. Boston—One electric deck winch with spare parts for motor—Bidder 3, $1623; 49, $1771.50; 99, $1604.70; 107, $1671.

Class 9. New York—One four-head milling machine—Bidder 62, $7095 and $6700; 79, $4533.

Class 10. New York—One automatic gear cutting machine—Bidder 7, $723 and $748; 79, $550.

Class 11. New York—One one-spindle geared vertical drilling machine, motor driven—Bidder 79, $269.

Schedule No. 65—Bureau of Steam Engineering.

Class 12. Portsmouth—One double iron adjustable saw table—Bidder 2, $200; 12, $260; 24, $190; 80, $323; 83, $249.

Class 13. Portsmouth—One upright wood boring machine—Bidder 2, $160; 12, $112; 80, $130; 83, $149.

Class 14. Portsmouth—One pedestal column scroll saw, with heavy iron tilting table—Bidder 2, $115; 12, $72 and $160; 32, $87; 76, $66; 80, $98; 81, $72; 83, $99.

Class 15. Portsmouth—One improved automatic band saw filer—Bidder 6, $56.50; 32, $57; 76, $60; 80, $56.

Class 16. Portsmouth—One automatic power band saw setter—Bidder 6, $41; 32, $22; 76, $21; 80, $41.

Class 17. Portsmouth—One retoother and shear for single or double cut bands, gauges or resaws—Bidder 6, $46; 32, $47.

The Bureau of Yards and Docks, Navy Department, Washington, will soon call for bids for a coaling plant to be erected at the naval station at Algiers, La. The sum of $148,000 is available for this purpose.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until March 25 for a 20-ton electric traveling crane for the Portsmouth Navy Yard.

The following bids were opened February 21 for supplies for the Mare Island and Puget Sound navy yards:

Bidder 4. Atlantic Works, Philadelphia, Pa.
18. Bertsch & Co., Cambridge City, Ind.
46. Caldwell Bros. Company, Seattle, Wash.
63. Eby Machinery Company, San Francisco, Cal.
70. Erie Foundry Company, Erie, Pa.
83. Hilles & Jones Company, Wilmington, Del.
88. Hallidie-Henshaw-Bulkley Company, Seattle, Wash.
90. Harron, Rickard & McCone, San Francisco, Cal.
94. Henshaw, Bulkley & Co., San Francisco, Cal.
127. Manning, Maxwell & Moore, New York.
138. Niles-Bement-Pond Company, New York.
144. O'Jaffe & Pinkus, New York.
150. Pacific Tool & Supply Company, San Francisco, Cal.
202. Tatum & Bowen, San Francisco, Cal.
209. Williams, White & Co., Moline, Ill.

Schedule No. 54.

Class 1. One 38-inch bevel band saw machine, motor driven—Bidder 4, $2500; 63, $2064; 94, $2240; 202, $2570.

Class 2. One steel plate gate shear—Bidder 18, $5000; 70, $4073; 83, $3990; 94, $4590; 209, $4900.

Schedule No. 55.

Class 3. One upright drill press—Bidder 46, $157.55 and $232.50; 88, $150; 90, $181; 127, $145; 138, $198; 150, $129; 202, $165.

Class 4. One single geared crank shaper—Bidder 46, $260; 88, $280; 90, $282; 127, $290 and $285; 138, $275; 144, $325; 150, $306; 202, $380.

Class 5. Puget Sound—One screw cutting extension gap lathe—Bidder 88, $565; 127, $825; 138, $547 and $1100; 150, $1356.70.

New Republic Furnace.—Plans have been prepared by the Republic Iron & Steel Company for a new blast furnace at Haselton, near Youngstown, Ohio. It will likely be 20 x 85 feet. The company owns and operates four furnaces in the Mahoning and Shenango valleys: Atlantic at New Castle, daily capacity 250 tons; Hall at Sharon, 175 tons; Hannah at Youngstown and Haselton at Haselton, each 175 tons. This gives the company a total output of metal of about 700 tons a day, all of which is used at its Bessemer steel plant in Youngstown. The company has been buying heavily of metal from outside furnaces and has therefore decided to build another furnace to make itself more independent. Contracts will shortly be placed for the new stack, and it is expected to turn out 400 or more tons a day of pig iron and to be ready for blast in October or November. The company has recently added another cupola to its Bessemer plant at Youngstown, bringing the output up to nearly 1800 tons a day.

HARDWARE.

IT is not easy to forecast the course of a movement or tendency which shows itself at first in a single department of commercial life. Changes in method in one sphere are frequently followed under the operation of the same principle by changes in other directions. A familiar example of this is found in the recent and still active tendency toward consolidation—the uniting of the interests of several concerns occupying the place of competitors in such a way that they are merged in a single organism. This principle, finding perhaps its earliest and most pronounced illustration in the fields of manufacture and transportation, is still asserting its influence in the world of finance and in connection with the distribution of merchandise. Another familiar instance is furnished in the operation of the principle of association in the development of trade organizations. There was a time in the Hardware field when the associations of manufacturers in a given line were practically the only ones of influence in the market. Since that day there has been an extraordinary development of the spirit of trade organization, until at the present time the associations in connection with the manufacture and distribution of Hardware are legion, ranging from great national organizations through those of less imposing dimensions to local associations of very limited scope but of considerable practical usefulness and importance. The principle has been carried to an extent which a few years ago would have been thought impossible. It is a significant fact which should be borne in mind in consideration of trade questions that the tendency still continues and has not yet reached its full development.

Manufacturers and jobbers in securing a market for their wares have been confronted by the disposition on the part of their customers to make purchases in their own places of business, awaiting the coming of salesmen instead of visiting the market themselves, as was the usage a generation or two ago. The sale of goods by traveling representatives of the manufacturers and wholesale merchants has thus become an established method, and the instances are few and unimportant in which the smaller merchants, or even the larger, find it necessary to go to the factories or warehouses of those from whom they draw their supplies. Indeed, this tendency is in the wholesale field carried to such an extent that the canvassing of the smallest class of stores, and sometimes even the shops, is becoming a troublesome feature of business, as the legitimate province of the local retail merchants is thus not infrequently intruded upon. This is, however, an illustration of the principle that the seller is more and more seeking out the buyer and pressing his wares upon his attention. Business is secured by those who go for it.

The same principle is beginning to assert itself in the retail field. It is not enough to have a well stocked store and courteous clerks who respond to the inquiries of customers for such goods as they desire to buy. It is getting to be the mark of an up to date merchant that he in an active, enterprising way cultivates trade by advertising and circularizing and other appeals more direct by means of which he brings his goods to the attention of the public, or more specifically to those whom he regards as his prospective customers. If he does this skillfully and persistently, using judgment and ingenuity in his methods, the retail merchant is doing much for the extension of his trade and is giving an indication that he is feeling the influence of the principle under consideration—namely, that those who have goods to sell must solicit the patronage of those who are to buy them. There are, however, many indications that the principle is being carried further by the most alert and most progressive retail merchants as they cultivate personally or through their salesmen of one kind or another the acquaintance and the business of those who can advantageously be reached in this way. It is becoming more frequent for such merchants, especially in the larger communities, to have one or more men spend at least part of their time outside the store, keeping in touch with contractors, farmers, shops and factories in the vicinity, thus securing business and strengthening the relations between the store and its customers. This is only doing in a limited field what manufacturers have long been doing in a larger field. All the signs of the times point to a still more general application of the principle, as enterprising houses are acting upon it and finding it an important means of strengthening their position in the community and building up their trade. The need for having such outside effort directed by wisdom and good judgment is obvious in order to avoid the danger of incurring an unjustifiable expense or of disturbing the local market under the stress of this form of competition, which is, after all, not essentially different in principle from that which is encountered and carried on by both manufacturers and jobbers. In this respect the retail merchant is only following in the footsteps of those from whom his goods are purchased, and the competition which is thus brought into the narrower field is simply analogous to that which prevails in the market at large. Whether or not this increased enterprise in the prosecution of business is advantageous in all its aspects there is little doubt that it is rewarded with a large measure of success, as evidenced in the experience of many merchants who are following such methods. As a profitable and successful means of cultivating business it is sure to be more generally prevalent. This is on the general principle that trade is secured by those who go for it.

Condition of Trade.

Merchants throughout the country are generally expecting an excellent spring business, but in the South there is something of a feeling of disappointment on account of the decline in cotton. Even in this section, however, there is fortunately a sufficient basis of prosperity for at least reasonably good business. The indications, indeed, are, notwithstanding the reduced prices of the Southern staple, that the general well-being of the people and the income from other sources will make the year's trade of at least average volume. A good many manufacturers are reporting the amount of current orders as only moderate and somewhat less than expected, but whatever basis there is for this feeling there is little doubt that the extent to which purchases were made in 1904 has interfered with trade in January and February. Certainly in many lines jobbers are well covered, having large stocks in their warehouses and many orders booked with the manufacturers, the execution of which will keep them well supplied during the spring months. The continued strength of the Iron market gives a firm undertone to Hardware values, and in several lines the existence of an upward tendency in prices is noticeable. In the bulk of miscellaneous Hardware articles there is, however, little disposition on the part of manufacturers to change quotations, as they recognize the importance of avoiding advances which it may not be feasible to maintain.

Chicago.

(By Telegraph.)

While the large jobbers have of course not completed their figures for February, business indications are that February will not show as great an advance over the previous year as January did. At the same time the month has been a good one and full of encouragement for the future, the falling off in business of the first three weeks due to the intensely cold weather having been partially compensated for by a great improvement in the last week due to springlike conditions. Merchant Pipe has been advanced $1 a ton, and the competitive grades of Builders' Hardware are characterized by a firmer tone. Business is quite brisk in Builders' Hardware, but the amount of business booked at present is thought to be only a fraction of what the immediate future will develop. Demand for Nails and Wire products is excellent for this time of year, and mills as a rule are fully employed. Refrigerators are beginning to move dealerward, and the same is true of Lawn Mowers, Garden Hose and Fixtures and other spring and summer goods. The impending danger of floods is somewhat mitigated by the gradual dissipation of snowfall during the last week, though there is still danger that serious floods may interfere with business. In general the Nut and Bolt business is active, and with the exception of such lines as Stove and Tire Bolts and Cut Thread Machine and Carriage Bolts the tone is strong and confident. Recent improvements in manufacture of Rolled Thread Bolts from wire have so greatly cheapened the cost of manufacture that these products are somewhat irregular in price.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The business situation brightens considerably as spring weather approaches nearer, and while some branches of trade feel the reviving influences more than others, it is safe to say that there is a general improvement all along the line. Indications point to a period of greater activity and enterprise than for several years past, due doubtless to the increase in values of our productions, coupled with the remarkable yield of wheat and corn during the past season. With more money in circulation there is good reason for the belief that this section of the country will contribute largely to the work of increasing production of everything that goes to satisfy the personal wants of all.

With the coming of spring and the revival of industries that have remained dormant during the winter months and the consequent employment of idle labor, general business may be expected to show a material improvement at no distant date. The gradual improvement in the city real estate market is a satisfactory indication of improved conditions. Expenditures proposed for public improvements, and the extensive preparations now being made for new business blocks, as well as private residences, afford assurances that Omaha during the present year will make another stride forward as an industrial and commercial center.

Boston.

BIGELOW & DOWSE COMPANY.—Business has been handicapped the past month by intensely cold and disagreeable weather. Great fields of floating ice have blocked the harbors along the whole New England coast, while inland deep snows have made the roads practically impassable. These conditions will improve as the sun gets higher and its rays warmer. It is many years since this country has been afflicted with such a severe winter.

With all these drawbacks there will be but a slight loss in sales as compared with past years. Trade is as capricious as the weather, for sunny, warm days bring lots of good orders, while dark and dismal days bring but few. The trade are prepared for a good business this spring, and when it fairly opens everything will go with a rush.

Prices are being well maintained and factories are fairly busy, while manufacturers are filling orders fairly promptly. Railroads have failed to make deliveries, which has been a serious factor. It is feared that these conditions will grow worse as the season progresses. The merchants who secure their supplies early will be the wise ones.

The probabilities are for an early spring, and with it will come a satisfactory and uninterrupted season of good business. Remittances come slow.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The wholesale trade are looking anxiously forward to the early days of March in hopes the days of our excessively cold weather, combined with frequent storms, sleet and snow, will cease to exist or at least be modified. During the past four to six weeks it has been almost impossible for salesmen to travel with any degree of comfort to meet the engagements they have made through postal cards or to secure attention when they arrive at places.

That this has had a depressing effect on trade it would be useless to deny. During that time the managers of the railroads complain they have had great distress owing to their inability to straighten out the freight traffic; cars have been delayed, closed in by snow drifts, the result of which has been that goods have been days and weeks in transit which should have reached their destination in 48 hours. Besides, cars are scattered over the country and headquarters cannot get the cars into their possession. Railroads centering in this city have contracted for a very large number of cars and hundreds of engines, both passenger and freight, in hope of being able to take care of anticipated traffic for the year. Manufacturers of Structural Iron say they never were so busy with orders, most of them given in the last days of 1904, the results of which must count in the near future.

From all sources we hear it predicted that trade will brighten up as soon as weather permits, and within the last day or two there are indications of a change in weather, the sun shining, the thermometer at a higher temperature, which is all we require, we think, to give a favorable account of trade. In the meantime jobbers are preparing their stocks and we have no hesitation in saying that stocks in jobbers' hands in this section are more satisfactory than they have been for many years past at this time of the year.

Taking all conditions into consideration, remittances have been very fair.

Cleveland.

THE W. BINGHAM COMPANY.—Business, owing to the bad weather conditions this month, is not as good as we had anticipated judging from the increase in January sales. Salesmen advise us that it has been impossible for them to make their usual towns and that they have been obliged to spend a large portion of their time either on trains or in railroad stations. While there has been a let up in the weather and we look forward to better conditions, still we do not anticipate any great improvement this month, owing to the fact that many buyers and traveling men are attending the Hardware conventions in different States.

Mail orders and orders through our traveling men during the month while small are well assorted, and if our men could have visited the trade as regularly as they would under normal weather conditions we believe the business in February would have shown an increase over the same month of other years.

Taking all conditions into consideration, collections have been good. Prices are being well maintained. The market is short of certain classes of goods, particularly Galvanized Sheets and Tin Plate. We would advise customers to anticipate their spring wants as far ahead as possible.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The local market is still rather quiet. We have not recovered from the frigid experiences of January and February. The mercury has climbed the tube and is away from the zero point, but the river is still closed by ice gorges, and until a warm rain or decided thaw comes is likely to stay so.

We are naturally interested in the activity of the New York stock markets, particularly the advance in steel and iron shares, though this is somewhat mystify-

ing. There is certainly no such scrambling for manufactured material now as would indicate unusual activity among buyers. Still, with the great abundance of money now on every hand new enterprises are bound to show up to give employment for idle funds. This condition generally means improvement in railroad equipment and also enlarged municipal work, as bonds bearing low rates of interest can be nevertheless marketed at advantageous figures.

Meetings of the various State Hardware associations are still going on and seem none the less popular year by year. They are really educational as well as social gatherings in which every one may carry away something valuable, dependent upon the receptive state of his mind at the time. Not the least interesting contribution are the portraitures of the leading men in such bodies. One hears their names and naturally desires to see the features. *The Iron Age* has certainly done its full duty by these meetings and accordingly by its constituents.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Trade in the Pacific Northwest still holds in fair volume, considering the season. The weather is favorable, with an almost summer temperature as we write. Collections are not up to what we might wish for. The near approach of tax paying time may in a measure account for their slowness.

The State of Oregon and the city of Portland are being advertised as never before in their history, and what the ultimate effect will be time alone will demonstrate. With one United States Senator and both members of the House of Representatives under indictment in the United States Courts, and Uncle Sam pushing the issue as he alone can, Oregon has attained an unenviable notoriety. We have paid for advertising in the past; now we are getting it gratis.

The Lewis and Clark Exposition, that is to be held here, will have the prestige of being held in the second healthiest city of the United States, according to late Governmental reports. This fact, coupled with our unrivaled summer climate, will be a big inducement, inviting an attendance that we might not otherwise expect.

Baltimore.

CARLIN & FULTON.—Since January 1 trade has been greatly affected by two causes, one, the low price of cotton, the other, the most extraordinary weather conditions of which we have any recollection. Shipments of goods, even when sold, have been almost impossible inasmuch as our harbor has been almost ice bound, while the smaller tributaries emptying into the Chesapeake Bay have been and are still frozen, rendering navigation impossible.

The country being covered with snow and ice is not susceptible of cultivation, and therefore the farming operations are retarded and consequently the country storekeepers continue dull. We think in a few days, however, a thaw will set in, which, however, will render the roads temporarily impassable, but March winds will no doubt do their share to improve matters, and we look forward to a brisk business as soon as this good old-fashioned winter shall have passed away.

NOTES ON PRICES.

Wire Nails.—The demand for Wire Nails has been affected to some extent by the severe weather which recently prevailed and by difficulties and delays in transportation, which interfered with the operations of both manufacturers and their customers. There is accordingly only a moderate demand, but the market is characterized by a decidedly strong tone, prices being steadily maintained. There is also a hopeful feeling in regard to future business, the indications pointing not only to a large volume of business in general, but to special activity in building. Quotations are without change, as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers	$1.80
Carloads to retailers	1.85

New York.—While there is little improvement in demand, expectations are for a large spring business. From territory tributary to this point jobbers are receiving reports that an unusually large amount of building and improvements is assured, which will be commenced as soon as the weather will permit. Jobbers are experiencing considerable annoyance by delays in transportation from mills. New York quotations are as follows: Single carloads, $1.99; small lots from store, $2.05.

Chicago, by Telegraph.—Demand has increased and is unusual for midwinter. Prices are firm and mills uniformly restrict their contracts to 60 days' dating. Quotations are as follows: $1.95, base, in car lots to jobbers; $2 to retailers, with 5 cents extra for less than car lots from mill.

Pittsburgh.—New demand for Wire Nails has been rather quiet in the past week, owing to unfavorable weather conditions, which have practically prohibited outside work of any kind. Specifications on contracts are coming in very freely, but prompt deliveries of Wire Nails are more or less retarded by shortage of cars. We quote Wire Nails in carloads to jobbers at $1.80; carload lots to retailers, $1.85, and in less than carloads at $1.90, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days.

Cut Nails.—There is only a moderate demand for Cut Nails at the present time, but the mills are anticipating a heavy business in the near future. Prices are well maintained, with only slight irregularities. Quotations are as follows: Carload lots, $1.80; less than carload lots to jobbers, $1.85, and to retailers, $1.95, f.o.b. Pittsburgh. Iron Cut Nails, for delivery at Pittsburg, Buffalo and all points west of these cities, 10 cents advance per keg on Cut Steel Nails.

New York.—Demand is light, as the weather has not become settled enough for outside work of any magnitude. There is no doubt, however, that Cut Nails will participate in the expected revival of building operations in this vicinity. New York quotations are as follows: Carloads on dock, $1.94; less that carloads on dock, $1.99; small lots from store, $2 to $2.05.

Chicago, by Telegraph.—The Cut Nail is sharing in the strength of the Wire Nail, and the following quotations are general: $1.95 for car lots to jobbers for Steel Nails; $2 in car lots to retailers; 5 cents extra for less than car lots, and from 5 to 10 cents extra for Puddled Iron.

Pittsburgh.—New demand is light, the mills running mostly on specifications on old contracts. We quote as follows: Carload lots, $1.80; less than carload lots to jobbers, $1.85, and to retailers, $1.95, f.o.b. Pittsburgh. Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Cut Steel Nails.

Barb Wire.—Manufacturers of Barb Wire are anticipating a large demand within the next month or two. The mills continue to be well occupied on contracts. The market is characterized by a decidedly firm tone. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.95	$2.25
Retailers, carload lots	2.00	2.30
Retailers, less than carload lots	2.10	2.40

Chicago, by Telegraph.—Mills are already unable to keep pace with the demand for some sizes of Barb Wire and it looks now as if it would require the full capacity of all the mills in the country, possibly night and day turns, to take care of the spring demand when it develops fully, if present conditions continue. Quotations are as follows: Car lots to jobbers, Painted Wire, $2.10; Galvanized, $2.40; car lots to retailers, 5 cents higher; less than car lots, Painted Wire, $2.25; Galvanized, $2.55; Staples, Bright, $2.05; Galvanized, $2.35.

Pittsburgh.—New business is rather light, but the mills expect a very heavy trade just as soon as favorable weather comes. Specifications on contracts are coming in fairly well. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.95	$2.25
Retailers, carload lots	2.00	2.30
Retailers, less than carload lots	2.10	2.40

Smooth Fence Wire.—In common with other Wire products, the market for Fence Wire is decidedly firm and the mills have many orders on their books. While current business is of only moderate volume, owing to the liberality with which orders have already been placed and the interference with business on account of delays in transportation, there is the confident expectation of a very satisfactory business during the season. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.65
Retailers, carloads	1.70

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago, by Telegraph.—The large demand for Galvanized Wire for fencing and other purposes has led to a shortage on that commodity, and mills are not anxious to take on more business at present prices. The same is true, but in a lesser degree, of Annealed Wire. Prices are unchanged, and quotations are as follows: $1.80, base, for Annealed Wire, in car lots to jobbers; $1.85 in car lots to retailers, with 5 cents advance for less than car lots, and 30 cents premium over Annealed for Galvanized.

Pittsburgh.—Only a fair amount of new tonnage is being placed, the mills running mostly on old contracts. With the return of good weather and the opening up of spring trade the mills look for a very heavy business. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.65
Retailers, carloads	1.70

Chain.—A meeting of the Chain manufacturers is being held in Pittsburgh to-day (Wednesday) and is very fully attended. Sentiment seems to strongly favor an advance of about $2 a ton in Chain to offset a similar advance in price of Chain Rods made by the manufacturers last week.

Builders' Hardware.—The market for Builders' Hardware is in excellent condition, and an advance of about 10 per cent. has been made by the manufacturers, going into effect March 1. The indications are regarded as excellent for a large volume of business during the season, as the prospect is that in many parts of the country there will be an unusual amount of building.

Rope.—Manufacturers are doing a business satisfactory for the season and are of the opinion that trade is opening up somewhat earlier than usual. The break of ¼ cent in the price of No. 2 Sisal Rope reported last week was of temporary duration, and the market has settled back to the former figure. Quotations are as follows: Pure Manila, 11¾ to 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 to 8¼ cents per pound.

Binder Twine.—The situation shows no particular changes. The leading independent concerns are still seeking business, but the trade, as a rule, appear rather indifferent about placing orders. No intimation has been given by the International Harvester Company as to its future policy regarding prices. The market is fairly represented by quotations ¼ cent in advance of those announced at the beginning of the season, as follows:

	Per lb.
Sisal	9¾c.
Standard	9¾c.
Standard Manila (550 feet)	10¾c.
Manila (600 feet)	12c.
Pure Manila (650 feet)	13¼c.

Five-ton lots, ⅛ cent less; carload lots, ¼ cent less, Chicago delivery, usual terms of payment. Kansas City, Omaha, Council Bluffs and Minneapolis, ¼ cent added. Prices not guaranteed. Allowing for freight, New York prices would be ¼ cent lower than the above.

Axes.—The advance of 25 cents per dozen in the base price of Axes, which went into effect February 15, is being firmly maintained by the manufacturers, but in many cases the jobbers whose stocks were purchased at lower figures have not made a corresponding advance. Regular quotations are as follows: Single Bit Axes, base weights, $6.75 per dozen; Double Bit Axes, $8.75 per dozen.

Oils.—*Linseed Oil.*—As the result of the advance in the price of seed, which has amounted to about 10 cents within the past week, the upward tendency in the values of Oil has been pronounced. Under the present conditions further advances are among the possibilities. Crushers are not anxious to accept contract orders at lower than ruling prices, and some will not book contracts for more than 60 days ahead. Quotations are as follows: City Raw, 45 to 46 cents, according to quantity; State and Western 44 to 45 cents per gallon, according to quantities.

Parcels Post Bills Before Congress.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, February, 28, 1905.

THE Senate Committee on Post Offices and Post Roads has reported an amendment to the Post Office appropriation bill in the nature of an entering wedge for a domestic parcels post. While the amendment does not appear to be very important, nevertheless, it will open the way to a sweeping change in the treatment of merchandise transported in the mails, and if adopted by this Congress will unquestionably be followed next winter by powerful pressure for further legislation along the same lines. The amendment is as follows:

Section 2. That hereafter fourth-class matter when mailed in packages not exceeding 16 ounces in weight shall be subject to the rate of 1 cent for each 2 ounces or fraction thereof.

It will be noted that this proposed change in the law would reduce the rate of postage on merchandise in 1-pound packages from 16 to 8 cents per pound. Such a reduction would unquestionably be of enormous advantage to the catalogue houses, whose postage bills on 1-pound packages would be reduced just one-half. While the limit of weight would be prohibitory upon certain classes of merchandise, the catalogue houses would experience very little difficulty in splitting up shipments of many articles so as to take advantage of the reduced rate. The Government would net a loss of a very large amount which would go into the pockets of half a dozen monopolistic mail order concerns.

The Retailer's Chief Concern.

The chief interest of the retailer in this measure, however, lies in the fact that it will open a door for a much more comprehensive change that will be demanded, not only by the Postal Progress League and other parties subsidized by the catalogue houses, but also by the Post Office Department, which is frequently more interested in matters of administrative convenience than in the cost or revenue of the postal service.

For several years the Third Assistant Postmaster-General has annually recommended the consolidation of third and fourth class mail matter at the rate now paid on the former—namely, 1 cent for 2 ounces, or 8 cents per pound. The argument in favor of this change is based, according to the Department, on "the difficulty of differentiating between third and fourth class matter, which is annoying to the postal official and irritating to the public." This irritation, it is declared, is "accentuated by the well-known fact that under the parcels post arrangements matter of the fourth class (merchandise) is sent to certain foreign countries in packages larger than are admissible to the domestic mails and at less than the domestic rate of postage—1 cent an ounce or fraction thereof."

It is frankly acknowledged by the Department that the proposed consolidation would result in an "apparent loss" of nearly $2,000,000 per annum, but the statement is made that "the experience of the Department shows that where there has been a reduction in the postage rate there has been a corresponding increase in the amount of matter mailed," from which it is argued that ultimately this loss would be wiped out. In other words, the Department foreshadows a very considerable addition to the already large deficit for some time to come, but believes that the increase in the use of the mails for the shipment of merchandise would soon be so great as to offset the decreased receipts per pound. Retail Hardware dealers should bear this argument in mind as indicating that certain officials of the Department are disposed to regard with favor a large use of the mails for general transportation purposes, a view that has not been

entertained in the Department since Postmaster-General Wanamaker retired from office.

A bill was presented in the House early in the present session designed to carry out the recommendation for the consolidation of third and fourth class matter, but this measure was promptly rejected by the House Post Office Committee. When the appropriation bill reached the Senate committee, however, a plea was made to Chairman Penrose and his colleagues to add the bill as an amendment. The suggestion was resisted on the ground of the loss in revenue that would certainly occur, but finally it was decided to incorporate in the appropriation bill an "experimental" provision providing for an 8-cent rate on packages limited to 1 pound. The logic of such a concession is rather difficult to appreciate. The principal argument in favor of the consolidation of third and fourth class matter is that it would simplify the classification of certain kinds of printed matter. Instead, however, of simplifying such classification the proposed amendment would render it more complex, introducing a new rate and a new weight limit, objections which do not apply to the proposition for the conolidation of third and fourth class matter up to 4 pounds per parcel.

Prompt Action Necessary.

It is probable that the contest over this amendment will finally be fought out in Conference Committee after the passage of the bill by the Senate. The House conferees are not likely to favor the plan, but they will be subjected to much pressure from the Department and from the Postal Progress League and other agencies by which the change is regarded as an important step toward the adoption of a domestic parcels post. All who are interested to prevent the adoption of this amendment should telegraph their protests at the earliest practicable moment to Senator Boies Penrose and Representative Jesse Overstreet, the respective chairmen of the Senate and House Post Office committees.

The Senate has also added to the Post Office appropriation bill a provision originally framed by the late Fourth Assistant Postmaster-General Bristow, which contemplates the establishment of a cheap local package delivery on rural routes. This provision is as follows:

Section 3. That hereafter the rate of postage on packages of books or merchandise mailed at the distributing post office of any rural free delivery to a patron on said route shall be 3 cents for each pound or any fraction thereof. This rate shall apply only to packages deposited at the local post office for delivery to patrons on routes emanating from that office, or collected by rural carriers for delivery to the office from which the route emanates, and not to mail transmitted from one office to another, and shall not apply to packages exceeding 5 pounds in weight.

There is a great deal of opposition to this provision in the House committee, and the House conferees will stand out against it very stubbornly if it is adopted by the Senate. As a matter of fact, it is far less dangerous than the amendment regarding fourth-class matter above referred to. Local retailers would be able to use the service thus established in delivering their goods to their customers on orders received by mail or telephone, while the catalogue houses would be unable to employ it as its use is limited to mail matter deposited at the distributing office of the rural route upon which the goods are to be delivered.

W. L. C.

OHIO HARDWARE ASSOCIATION.

(By Telegraph.)

THE eleventh annual convention of the Ohio Hardware Association was inaugurated at 10 o'clock Tuesday morning in the sun parlor of the Algonquin Hotel, Dayton, with a meeting of the Executive Committee. The convention proper was called to order in the afternoon at 2.30 o'clock by President John F. Baker. Rev. Merle H. Anderson made the opening prayer.

J. P. Duffey, as representative of the Hardwaremen of Dayton, with appropriate remarks then presented the president with a mahogany gavel in the exact form of a Machinist's Hammer.

The members of the association, as visitors to the city, were welcomed in an address by J. D. Clark on behalf of Mayor Charles A. Snyder, which was responded to by Vice-President C. S. Johnson, as follows:

It is with a great deal of pleasure that I have the honor of being a member of this distinguished body of men, and a double honor to respond in a few words to your kindly and well said remarks. And it is with a feeling of pride I say to you that we are the retail Hardware dealers of Ohio, and have no apologies to offer regarding our personality. We believe you will find our convention will not suffer in comparison with other conventions which so often meet in your hospitable city, whether they are business or professional men or politicians.

We are at least very well satisfied with ourselves. This is largely due to what we have accomplished in the 11 years of our existence as an association. One of our main objects is the protection of our rights, we being what are called middlemen, and we have to watch fore and aft.

It is of vital importance that the retail dealer buys his goods right, and we have learned that the wholesaler can hear far better and sooner when spoken to through the association than by one retailer who stands alone, thus proving the old adage that "in union there is strength."

A source of pleasure and profit to the members of the association is the privilege of meeting the knights of the grip. I fear we do not appreciate the labors of these faithful friends, and we owe much of our prosperity to them. Their visits to our places of business are a source of inspiration as well as information, and let us not forget to give them the glad hand of welcome and as large an order as our business will justify.

In closing permit me to say that since you have become familiar with our accouterments you may expect that during our stay at least we will be on our good behavior, and when we leave your city your people will discover an aching void that will be hard to fill. Again we thank you for your very friendly greeting.

The roll call which followed showed an attendance of about 200, which is large for an opening session.

Owing to the almost fatal illness of his son W. P. Bogardus, president of the National Association, was unable to be present.

Convention Committees.

The president announced that the following convention committees had been appointed:

RESOLUTIONS: Henry F. Rahe, G. W. Wiley, J. J. Ewing, John Henne, J. W. Lingo.

NOMINATIONS: F. W. Ingalls, P. E. Coffman, C. C. Heller, W. W. Osborn, E. F. Wineland.

QUESTION BOX: H. C. Wiseman, J. E. Good, L. G. Church.

LAWS RELATIVE TO THE HARDWARE TRADE: W. W. Crumrine, Albert Bobinger, R. W. Goodard, Isaac Ullery, J. D. Giselman.

MEMORIAL: B. W. Ricket, M. A. Griffith, D. L. Lefever.

The Question Box was then opened and several of the questions contained in it were read and discussed.

The president introduced M. L. Corey, secretary of the National Association, who is to make an address on Wednesday afternoon. He spoke briefly regarding the greater interest taken in the Hardware conventions this year than ever before.

Sharon E. Jones of Richmond, Ind., a guest, was called upon by the president to show what a Hoosier Hardwareman looked like. In a few forcible words Mr. Jones urged the formation of local associations regardless of the size of the town.

Announcement was made of an invitation extended by the National Cash Register Company to the wives of association members to visit its factory at 2 o'clock Wednesday afternoon. A committee of Dayton ladies will act as escort.

Tuesday the Hardware merchants of Dayton entertained the members of the association at the National Theatre.

Officers of the association are enthusiastic over the

success of the opening session and the prospects for the rest of the convention.

Three hundred and fifty members had registered at the information bureau up to 9 o'clock Tuesday night.

WEDNESDAY MORNING SESSION.

At the Wednesday morning session President John F. Baker read his annual address, as follows:

Since last we met one more year has passed away, and now we stand on the threshold of another new and, may we hope, prosperous year, which is bright in prospect and opens auspicially, bidding fair to surpass its predecessor in mercantile and commercial pursuits. As we review the year that is gone, it is safe to say that with the majority of our members it was a disappointment. The reports as gathered by the various trade journals from trade centers

C. S. JOHNSON.

indicate that the volume of trade in 1904 was not equal to that of 1903. The fact that it was a Presidential year, and also that in the opinion of many a financial panic was surely due, made it the part of wisdom to prepare for some depressing influence. All this conspired to build up a wall of uncertainty and hesitation which did not confine itself to our own branch of trade but to all lines of industry. But now the feeling of doubt has passed away and we stand at the very threshold of the bright, promising and prosperous year of 1905.

My opinion is no better than that of the oldest or youngest member of our association, but I see nothing in view to hinder the coming of a good, successful and pros- year. The political question has been shelved for some time, even if the shelving process seemed strenuous for some of us, the labor agitators have subsided for a while and labor troubles have quieted down; the tariff problem is disposed of for a few years at least, and the silver misfit has been given a decent burial. These disturbing elements having been relegated to the rear for, we trust, many, many days, I fail to see anything that should impede the coming of a season of prosperity and activity such as we have not known.

Let us then be optimistic rather than pessimistic, and, putting forth our best efforts, go forward to meet the promising year with confidence and courage.

PROFITS AND EXPENSE ACCOUNT.

But whether we have the full measure of prosperity or not, the days that are to come call for the exercise of our best judgment, for you and I have made the discovery that as the years come and go we find this one feature, our profits are gradually diminishing and our expense account perceptibly increasing. This is the experience of all. Competition grows more and more severe, and with all the system and method we may employ, our expense account does not diminish.

With this thought uppermost in his mind, your president made the suggestion at the last meeting of the Executive Committee that the larger part of the programme of the present session be given over to the consideration of the Question Box. The suggestion was heartily agreed to, and you will note by referring to the programme the larger part of our sessions are given to questions that are to be found in the Question Box. I have noticed in the past six or seven conventions that this was the important part of our session, and times without number have I heard the members regret that what to them was the valuable part of our meeting was unfortunately abridged and neglected. I bespeak, therefore, at this convention the very fullest discussion of the problems and queries that are propounded. This discussion will be of great value to us, and I intend, as your presiding officer, to insist upon and give the largest liberty to the consideration of these problems, as I verily believe that no body of business men should be permitted to come together except for the promotion of business interests in a businesslike manner.

MEMBERSHIP.

Regarding our membership, I am happy to say that progress is still the watchword. We do not, however, increase as rapidly as we should, but our growth is healthy and of good substance, and if it so continues we shall in the near future include all the dealers of our State. At times the officers of our association have wondered why the growth was not more rapid, but if they will refer to one of my reports while secretary some seven years since they will note that the officers at that time were similarly perplexed. In the report referred to I used these words:

> Surely, there must be something in an association of business men that should appeal to the dealers of Ohio, who are not members. The discussion of trade topics, the interchange of ideas, coupled with an enlarged acquaintance and the fellowship that exists between our members, all these must in some degree tend to moderate the sharp competition that usually exists between dealers, and in its place beget the fraternal spirit that ought to prevail. . . . If the Hardware dealers of our State could but know the value of an organization, which in its very nature is bound to be a guardian of their rights, they would quickly come forward and join, thus protecting themselves and strengthening our association.

Now, since that time our association has grown from 100 to 350 members, and I have reason to believe that at the adjournment of this session we shall have a membership of 400.

PLEASANTER BUSINESS CONDITIONS.

The Ohio Hardware Association has done much for the dealers of Ohio. I venture the assertion that under

J. F. BAKER.

its beneficent influence its members are doing business under pleasanter conditions now than in the days that have gone before; that our stores are neater and brighter; that our modes of transacting business are better, and that we employ more system than at any time in the history of our establishments, all of which is due to the influence of and affiliation of our fellow tradesmen. And,

best of all these advantages and benefits that have come to us are the tangible returns that we have received from the organization of our Mutual Fire Insurance Company, and not only have these benefits come to us, who are members, but they have been most generously shared with other dealers in the State, who have not as yet joined our association.

The annual report of the secretary of the insurance company will be presented to you, and, having seen and read the advance sheets, I am pleased to advise you that a good report will be read in your hearing.

The catalogue house question will also come up for a full and free discussion, and as I am and always have been of the opinion that this matter should be discussed only in executive session, I shall make no mention of this subject, further than to say that since Mr. Corey is with us, he will, as secretary of the National Association, enlighten us very materially on this altogether important matter.

PARCELS POST.

Regarding the Parcels Post law, which we have been so successfully fighting for a few years, I find by Congressional reports that the friends of this iniquitous measure have put it in a new dress, and give it a new name; but let me warn you, do not be deceived; it is a delusion and a snare. The voice is the voice of Jacob, but the hands are the hands of Esau. You should, therefore, take decisive measures before we adjourn and lose no opportunity to notify our Representatives in Congress of our action.

DAYTON.

It is not necessary that I should prolong this paper farther than to express the personal wish that this shall be the best convention in the history of our association; that, from a business point of view, it shall be the most profitable. As stated before, let us make the business part of it predominant. We have invited you to Dayton because we want you to see this beautiful city, and also that you may study its great commercial and manufacturing interests, some of which are second to none in the nation, and this invitation comes to you from all the Hardware dealers of Dayton, who are unanimous in the wish that this shall be the most successful convention we have ever had.

We are competitors in the fullest sense of the word; nevertheless, I am pleased to say to you that, without a single exception, every Hardware dealer in our city has responded to the call for assistance, and will be found in evidence on the various committees. As your president I am unable to express in words my appreciation of this kindly, fraternal spirit, because it is one of the cardinal principles of our great organization, which we seek to inculcate among Hardware dealers in every village, town and city in our State.

Secretary's Report.

Frank A. Bare, secretary, presented his annual report as follows:

One of the serious problems that confront this organization to-day is the question of getting new members. I believe there is more enthusiasm in this State to-day than at any time before. This is because the association idea is growing all over this country. A great deal of our inspiration has been derived from the National Association. This body has done such magnificent work that the progressive dealer sees it is to his interest to identify himself with the movement.

Since last April the secretary has mailed to dealers in this State, members and nonmembers, over 12,000 pieces of mail matter. With the exception of mailing out *The Iron Age* reports and the membership lists very little was done until after the first of this year. We then commenced an active campaign and have tried to keep at it steadily ever since.

We have asked a great many of our members to do some personal letter writing as well as telephoning and we found both of these methods very satisfactory. After a man has been called up by 'phone by some friend he is, I find, much more apt to read over carefully the letters sent out by the secretary. I have asked at least one member, and sometimes more, in every county in the State to telephone some of the dealers in his county. A large number of these members responded to the request. Seventy-five new applications had been received by the secretary up to the time of the convention.

THE TRAVELING MAN HAS BEEN VERY LOYAL

to our association. Early in January the secretary addressed letters to 265 of these gentlemen who call on Hardware dealers in this State, asking them to give some of their time and influence to interesting nonmembers in our organization. In about three weeks this letter was followed by a second letter. I wish to express my appreciation of the hearty responses received to this request. A number of dealers have written me concerning the interest the traveling representatives have taken. A traveling man meets the dealer face to face and is in position to state the strong points of our organization in a very emphatic and convincing manner. This association must not forget the help and assistance constantly given us by traveling salesmen.

F. A. BARE.

I wish to especially thank those dealers who have taken the time to write personal letters in the interest of the association. A large number of responses have been received to the request sent out by the secretary asking members to write to two nonmembers. Outside of personal solicitation I regard personal letters as the most effective way of getting new members.

ASSOCIATION SPIRIT.

February 3 the secretary attended by invitation a meeting of the Hardwaremen of Akron and vicinity. The meeting was very helpful and enthusiastic, and all nonmember dealers in Akron joined the association on this occasion. I take this opportunity to say that the Akron dealers have the true association spirit. They seem to understand each other thoroughly and work together as Hardwaremen should. More local organizations will strengthen our State Association and create a legitimate profit where business is now done on practically no margin at all.

February 13 the secretary attended a meeting of the Maumee Association at the Boody House, Toledo. New members for our association were secured as a result of this visit. It is a great satisfaction to attend a meeting of the Maumee Association. Its members are businesslike and hold their meetings for the benefit of their business.

Our State organization is under great obligations for the constant assistance afforded us by the national organization. It is through the National Association we are able to handle larger affairs.

MUCH WORK REMAINS TO BE DONE.

In closing I wish to say there is a great work yet to be done by this association. But this work will never be

accomplished until our organization is truly representative of the retail Hardware interests of Ohio. It can never be truly representative until its roll of members includes the great majority of the Hardware dealers of the State. When we can go before a manufacturer or jobber not representing 400 dealers, but representing the Hardware dealers of Ohio, we shall be able to convince the manufacturer or jobber that it is to his best interest to be loyal to the retailer.

The dealers of this State are now thoroughly interested and aroused, and it is the opinion of your secretary that the time is now ripe for an active State campaign that shall so greatly increase our membership as to enable us to bring about the results we have so long worked for. This campaign cannot be carried out except by the individual and determined efforts of every single member of this association. The responsibility of future success rests not upon president, secretary or any other officer alone, but upon each and every member of this body.

Parcels Post.

M. L. Corey, national secretary, read a telegram which he had just received from Washington stating that the Parcels Post matter would be voted upon by the Senate to-day, and urged immediate action by the association.

F. E. Thompson of the editorial staff of *The Iron Age* presented a statement in which the present status of Parcels Post before Congress was described, together with the proposed modification in parcel rates, to which reference is made above, and the necessity for prompt action on the part of the Hardware merchants of the country if the plans of the Postal Progress League and other catalogue house interests are to be frustrated.

On motion the corresponding secretary was instructed to send telegrams to Senators Boies Penrose and J. B. Foraker, to Representative Jesse Overstreet and to Gov. Myron T. Herrick of Ohio, the latter to urge the Governor to rescind his recommendation of the bill. The telegrams read as follows:

The Ohio Hardware Association in convention assembled, representing 1400 Hardware dealers, earnestly protest against the passage of the Senate Parcels Post bill. We desire you to represent our interests in this matter.

It was urged by Mr. Corey that each member of the association telegraph his Congressional representative immediately after adjournment and during the noon hour. This will doubtless be done to a large extent.

J. T. Isham & Son, Hardware dealers, Coffeyville, Kan., have dissolved and the wholesale and retail business is now being conducted under the style of Isham & Shaw. The establishment has been enlarged and important improvements have been made in the interior in the way of new shelving, counters, &c. Paints, Oils, Glass, Seeds and Tin shop have been added to the former lines.

A. N. Duster & Co., are successors to James Land & Co. in the Hardware, Stove and Implement business at Farwell, Neb.

Mawhor & Gowdy have disposed of their Implement business in Tabor, Iowa, and will continue in the Hardware line.

Hilliard & Cornic have sold their Hardware and Implement business in Mount Union, Iowa, to H. R. Williams.

H. W. Stadtlander Hardware Company has recently opened up in the general Hardware business at Burlington, Iowa.

ESTATE OF P. D. BECKWITH, Dowagiac, Mich., manufacturer of Round Oak Stoves, Ranges and Furnaces, in a very attractive folder announces that it will be represented at the annual meeting of the New York State Association of Retail Hardware Dealers next week at the Hotel Iroquois, Buffalo, by C. B. Harris and A. E. Rudolphi.

THE AMERICAN HARDWARE CORPORATION.

THE annual meeting of the stockholders of the American Hardware Corporation was held at the office of the Russell & Erwin Mfg. Company, in New Britain, Conn., on Tuesday, February 28. The capital stock was increased from $5,000,000 to $7,500,000. It was voted to absorb the Corbin Cabinet Lock Company. The following directors were elected:

Philip Corbin,	Howard S. Hart,
Andrew Corbin,	Sylvester C. Dunham,
Charles M. Jarvis,	Frederick P. Wilcox,
Andrew J Sloper,	John H. Whittemore,
Charles H. Parsons,	Charles Miller,
Charles Glover,	George W. Corbin.

The directors elected the following officers:

PRESIDENT, Philip Corbin.
FIRST VICE-PRESIDENT, Charles M. Jarvis.
SECOND VICE-PRESIDENT, Howard S. Hart.
TREASURER, Andrew J. Sloper.
ASSISTANT TREASURER, Charles H. Parsons,
SECRETARY, Charles E. Wetmore.
ASSISTANT SECRETARY, Charles B. Parsons.

The annual meetings of the stockholders of the constituent companies of the American Hardware Corporation were held in New Britain, Conn., on Monday, February 20, and resulted in the choice of the following list of officials and directors:

P. & F. CORBIN.

PRESIDENT, Philip Corbin.
FIRST VICE-PRESIDENT, Charles H. Parsons.
SECOND VICE-PRESIDENT AND TREASURER, Charles E. Wetmore.
ASSISTANT TREASURER, Edward L. Prior.
SECRETARY, Albert N. Abbe.
ASSISTANT SECRETARY, Charles B. Parsons.
DIRECTORS: Philip Corbin, Andrew Corbin, John B. Talcott, Charles Miller, Charles H. Parsons, Charles Glover, Charles E. Wetmore, Charles M. Jarvis, Albert N. Abbe.

It will be noticed that Andrew Corbin retires as first vice-president and Charles H. Parsons is promoted to this position, and Charles E. Wetmore, formerly secretary, has been advanced to the position of second vice-president and treasurer.

THE CORBIN CABINET LOCK COMPANY.

PRESIDENT, George W. Corbin.
FIRST VICE-PRESIDENT, Charles M. Jarvis.
SECRETARY, W. H. Booth.
ASSISTANT SECRETARY, George L. Corbin.
TREASURER, C. H. Baldwin.
DIRECTORS: Philip Corbin, Andrew Corbin, John B. Talcott, Charles Miller, George W. Corbin, Darius Miller, Charles Glover, Charles M. Jarvis, C. H. Baldwin.

The changes here are the advancement of George W. Corbin to the position of president, Philip Corbin withdrawing from this position.

THE CORBIN SCREW CORPORATION.

PRESIDENT, Charles Glover.
VICE-PRESIDENT, Clarence A. Earl.
TREASURER AND SECRETARY, Theodore E. Smith.
ASSISTANT SECRETARY, William J. Surre.
DIRECTORS: Philip Corbin, Charles M. Jarvis, Charles Glover, Howard S. Hart, Theodore E. Smith, Charles H. Parsons, Benjamin A. Hawley, Clarence A. Earl, Andrew Corbin.

THE RUSSELL & ERWIN MFG. COMPANY.

PRESIDENT, Howard S. Hart.
VICE-PRESIDENT, Benjamin A. Hawley.
TREASURER, Isaac D. Russell.
ASSISTANT TREASURER, Joel H. Van Newkirk.
SECRETARY, Theodore E. Smith.
DIRECTORS: Andrew J. Sloper, Frank L. Hungerford, Charles E. Mitchell, Howard S. Hart, Benjamin A. Hawley, Isaac D. Russell, Philip Corbin, Charles M. Jarvis, Joel H. Van Newkirk.

THE CORBIN MOTOR VEHICLE CORPORATION.

PRESIDENT, Philip Corbin.
VICE-PRESIDENT AND TREASURER, Maxwell S. Hart.
ASSISTANT TREASURER AND SECRETARY, Paul P. Wilcox.
DIRECTORS: Philip Corbin, Charles M. Jarvis, Howard S. Hart, Charles Glover, Paul Peck Wilcox, M. S. Hart, Andrew J. Sloper, Robert C. Mitchell, George W. Corbin.

The changes in the Corbin Motor Vehicle Corporation are important, as Maxwell S. Hart, who has for a number of years had charge of the rolling mills of the Stanley Works, takes the position of vice-president and treasurer and will be the active head of the corporation.

A LARGE portion of the plant of the Iron Clad Mfg. Company, Brooklyn, was destroyed at an early morning fire Tuesday, February 28, which involved the enameling and annealing department and destroyed valuable machinery. The loss is roughly estimated at $100,000.

NEW ORLEANS LETTER.

FROM A SPECIAL CORRESPONDENT.

IN the opinion of the Hardware merchants of New Orleans who are in touch with industrial conditions through the section of the South tributary to this commercial center there has been a revivification of business throughout that part of the lower Middle South that was so grievously affected by the tremendous slump in cotton valuations following the bureau report of December 3 last. This conclusion is based on the reports from all sections of the region thus affected. Generally summed up, the situation now is this: After a full season surpassing anything in the history of the city there came a period of dazed alarm immediately following the bureau report; then an era of partial stagnation lasting from the middle of December well into January. Then came the Interstate Cotton Convention, the avowed determination of the cotton planters to reduce their cotton acreage to a point where the product would command a price sufficient to bring the total far above that received for the present crop, and to retain their cotton on hand until the spinners should be forced to pay enough for what they actually had to have to enable the planters to derive a profit from the sale thereof.

This convention, carrying the sentiment into the country, backed by words and actions from the bankers and commission men who supply the planters, renewed credit and increased the potential purchasing power of the cotton section immeasurably within a fortnight. Trade began to move once more, and just now, after a January 15 per cent. below the same month in 1904 in Hardware sales, there is now well on a February during which the volume of Hardware business is said to equal that of February, 1904, and that was the best in the history of the city.

There is still a feeling of uneasiness in many quarters and some firms declare that business is not so good, but the consensus of opinion is that not only has the crisis passed, but that an exceptional business is in prospect for the next 12 months.

A Significant Result.

There has been a significant result from the scare experienced by the Hardwaremen during the two or three weeks of uneasiness and alarm. There is no denying the fact that had the cotton remaining in the hands of the planters been dumped on the market there would have been an absolute collapse of values throughout the South. There is no denying the fact that the entire section dependent on cotton was in a perilous situation and that only the evident determination of the planters not to plant a full acreage has restored confidence.

Now the Hardwaremen are desirous not to longer carry all their ventures in one bottom. Consequently there has been evident during the past four or five weeks a renewed interest in the concerted efforts being made by the commercial organizations of the city to build up the New Orleans interest in the Spanish-American and West Indian trade. Hardwaremen have taken the lead in the movement, with such persons as Mr. Wight of Woodward, Wight & Co.; James W. Porch of the Lukens Iron Works agency in the city, Albert Baldwin and the members of the Stauffer-Eshleman Company. This movement is already beginning to bear fruit. From Spanish America there has been a quickening of Hardware orders, and the steamship connections with Central America and with Cuba are all announcing added business and heavier passenger and mail traffic in the Hardware interests.

Cuba and South America have joined in buying farm implements in added quantities, but the work of introducing these lines into South America below the isthmus proves a hard task.

Total exports of implements during 1904 were, according to the figures from the custom house, $842,000, an increase over 1903, due chiefly to the heavy shipments made by the International Harvester Company into Russia via New Orleans and the ports of the Black Sea.

During January the exports to Spanish America, unclassified, but of which Hardware, Implements and such merchandise formed a considerable proportion, indicate a large increase in business. The totals are: Cuba, $479,680; Mexico, $163,601; Panama, $118,544; British Honduras, $71,259; Honduras, $63,407; Nicaragua, $59,646; Guatemala, $45,732; Costa Rica, $38,576; Colombia, $31,333, making a total of $1,071,778 for the month. February figures thus far advanced show a considerable increase.

How the Lines Are Running.

While all this definite strenuous exertion is going on to make the Hardwaremen independent of the cotton crop or the sugar crop, they are nevertheless watching with keenest attention the trade as it is now running, that an idea may be formed of the outlook. Just now building supplies and material are leading all other lines. The territory that is buying the most is that dependent on the sugar crop. This same section is buying Farming Implements and Farm Machinery with lavish discretion. To the timber belt builders' supplies and material are going heavily. This same section is also buying mill supplies with a steady strength that has been maintained since early last autumn.

Farming Implements, while going well to the sugar planters, are not being sold at all to the rice planters, who have little or no credit, and are going in vastly diminished quantities to the cotton section, whence comes most of the Farming Implement trade. This decline in the Implement business has come since the cotton convention and is taken to indicate that the cotton planters are going to reduce their acreage.

Building material and supplies and a fair degree of general Hardware are being sold to the cotton section. There has been a strengthening of credit, but collections have been practically nil for at least six weeks, save from the larger houses. However, there is a general desire to aid the efforts of the jobbers and small town dealers to tide over the situation.

AMONG THE HARDWARE TRADE.

W. H. Angle, Piqua, Ohio, has recently incorporated his general Hardware and supply business under the name of the Angle Hardware Company.

P. O. Hanson, Twin Valley, Minn., has succeeded A. H. Froshang in the Hardware, Stove, Paint and Sporting Goods business.

The Thornton & Broz Hardware Company, Cleveland, Ohio, has been incorporated with a capital of $25,000. The company will handle Shelf Hardware, Stoves and Tinware, Paints and Oils, Sheet Metal Work, &c.

The firm of Hawley & Snowden, Media, Pa., has been dissolved, owing to the death of Samuel W. Hawley. Henry C. Snowden, Jr., has purchased Mr. Hawley's interest and will continue the business at the old stand under his own name.

W. N. Graham, dealer in Hardware, Stoves, Paints, Sporting Goods, &c., Clarendon, Ark., has disposed of his business to Thomas & Pearce.

C. K. Coleman & Co., Arvada, Col., have sold out their Hardware, Stove, Implement, Paint and Harness business to the Arvada Hardware Company.

D. H. Miller, Medford, Ore., has disposed of his general Hardware business to Garnett & Roberts, formerly of Oklahoma Territory.

Kauffman Bros. Company, Abilene, Texas, incorporated with a capital of $10,000, has succeeded Kauffman Bros. in the Harness, Implement and Vehicle business.

DANIEL KUSEL, probably the oldest Hardwareman in Wisconsin, died at his home in Watertown, Wis., February 22. Mr. Kusel was 94 years of age. In the year 1849 he located in Watertown, starting a Hardware, Stove and Tin business, which has developed into the large Hardware establishment now operated by his sons, D. & F. Kusel.

HARDWARE ORGANIZATIONS.

The following conventions of Retail Hardware Associations will be held during March:

CONNECTICUT RETAIL HARDWARE DEALERS' ASSOCIATION:

Second annual meeting, March 7, Hartford. Headquarters, Hotel Hartford. President, W. A. Church, Derby; secretary, James De F. Phelps, Windsor Locks.

NEW YORK STATE ASSOCIATION OF RETAIL HARDWARE DEALERS:

Third annual meeting, March 7, 8 and 9, Buffalo. Headquarters and meeting at Hotel Iroquois. Membership, 175. President, John G. Ferres, Johnstown; secretary, John B. Foley, Syracuse.

CALIFORNIA STATE RETAIL HARDWARE ASSOCIATION:

Fourth annual convention, March 8, 9 and 10, San Francisco. Headquarters, St. Francis Hotel. Membership, 365. President, O. F. Sites, San Francisco; secretary, Henry Gracey, 235 Powell street, San Francisco.

NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION:

Minneapolis, Minn., March 14, 15 and 16.

NEW ENGLAND RETAIL HARDWARE DEALERS' ASSOCIATION:

Twelfth annual meeting, March 15 and 16, Boston. Headquarters, Hotel Vendome. President, John H. Sayward, Haverhill; secretary, F. Alexander Chandler, 36 Federal street, Boston.

Pennsylvania Wholesale Hardware and Supply Association.

The next meeting of the Pennsylvania Wholesale Hardware and Supply Association will be held at the Hotel Astor, New York, on March 15.

New York State Association of Retail Hardware Dealers.

The programme for the third annual convention of the New York State Association of Retail Hardware Dealers at the Hotel Iroquois, Buffalo, March 7, 8 and 9, just issued, shows that preparations have been made for what should prove to be an interesting, instructive and enjoyable meeting. Among the formal addresses will be those of W. P. Bogardus, president of the National Retail Hardware Dealers' Association; C. H. Miller, president of the National Insurance Company, whose subject will be "Mutual Fire Insurance"; R. U. Conger of the Sheldon School of Scientific Salesmanship, Chicago; A. E. Towne of Saratoga Springs, who will handle the topic "Credits: the Necessity for Curtailing Them"; E. J. Neale of Buffalo and R. R. Williams, Hardware Editor of *The Iron Age*. Representatives of Russell & Erwin Mfg. Company, P. & F. Corbin, Sargent & Co., Yale & Towne Mfg. Company, Reading Hardware Company and Landers, Frary & Clark will also address the gathering. As much of both sessions on Wednesday as may be desirable will be devoted to the joint discussion of matters of mutual interest with manufacturers and jobbers and their traveling salesmen. The entire session on Thursday afternoon will be devoted to a discussion of topics suggested through the medium of the Question Box. It is to be hoped that the retail Hardwaremen of the great State of New York will show something of the praiseworthy interest and spirit which has characterized the recent large and enthusiastic conventions in the Western States, and by their presence in force at the coming meeting demonstrate their recognition of the beneficence of association work and their willingness to co-operate in a movement which means so much to the retail Hardware merchant. The time has certainly come when a much larger percentage of the retailers of the State should be identified with the association, and the Buffalo meeting should chronicle material accessions to the membership roll.

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Pennsylvania Retail Hardware Dealers' Association.

THE fourth annual convention of the Pennsylvania Retail Hardware Dealers' Association, called to meet in the Board of Trade Building at Harrisburg, Tuesday, February 21, at 10 a.m., was adjourned by President Joseph M. Selheimer until 1.30 p.m., owing to the late arrival of members in consequence of the fact that elections for municipal officers were being held throughout the State, the date having been inadvertently chosen.

The association members were cordially welcomed to Harrisburg by the Mayor, Vance C. McCormick. George L. Moore of Brownsville gracefully responded to the Mayor's welcome on behalf of the association.

Convention Committees.

The president announced the appointment of the following convention committees:

PRESS: W. H. Heim, E. H. Darville of *The Iron Age* and S. S. Bryan.

AUDITING: J. H. Bowers, J. B. Holderbaum and A. H. Kaufman.

NOMINATIONS: J. F. Howe, G. C. Kline and J. E. Digby.

NEXT MEETING PLACE: George L. Moore, U. D. Coal and J. H. Linck.

T. J. Fernley's Address.

T. J. Fernley, secretary-treasurer of the National Hardware Association, addressed the gathering on invitation. Mr. Fernley congratulated the members on the progress they had already made and treated at some length the relations between the retailers and jobbers, along which lines, he said, substantial advances had already been made and many more were desired. He observed also that the National Association is much stronger now than it was two years ago.

Catalogue Houses.

President Selheimer referred to the annoyance caused retailers by catalogue house competition, and was followed by S. R. Compton of Harrisburg, who related several pertinent instances of that kind of competition. A member from Potter County estimated that in his section 75 per cent. of the families had in their possession the trade literature of the catalogue houses. His experience was that at the railroad depot in his territory there would always be found freight from such sources for consumers.

Another member from the southeastern part of the State observed that there some leading individual acts as agent, writing out and forwarding orders, adding that the business is growing. His conclusion was that the remedy lay in the retail dealer waking up on the subject.

A dealer located in the central part of the State while annoyed by catalogue house competition complained most about that of the so-called jobbing houses, whose principal business was retailing, but which made an effort to job some goods.

President's Address.

The annual address of President Selheimer was as follows:

It affords me great pleasure to greet you at this the forty-fifth annual meeting of the Pennsylvania Retail Hardware Dealers' Association. I am pleased to see many familiar faces and shake the hands of those who from the organization of the association have never failed to give us their presence and good work. I am also pleased to see and welcome so many new faces. It is evidence that our work during the past year has not been in vain. Of the 12 months that have just passed since our last meeting, from a business point of view, I cannot speak flatteringly. I have no doubt the depression in the iron and steel industries throughout the country has affected most of us to a greater or less extent. But trade conditions of the country for the coming year are much more encouraging. The business of the whole nation now rests on a firmer foundation, with indications for a very busy and I hope profitable year.

OUR ASSOCIATION.

The details of the doings of the association for the year past I will not dwell on, as the secretary in his report will enlighten you on that subject. I shall say that the association during the year just ended has grown much in strength, numbers and usefulness. We are now beginning to feel the strength and vigor of manhood. Why is it we have taken on so much new life? Is it not that the Hardware dealers of Pennsylvania have awakened to the fact that something is wrong? That they have been imposed upon in different ways by some manufacturers and many so-called jobbers? They are now seeing that as individuals they cannot eradicate these innovations and wrongs that have for years been creeping one by one upon them, which if left alone must eventually do us much harm. Their eyes have been opened; they now see the necessity of a united effort of all the Hardware dealers to cope with them if good results are to be obtained. We must be united in one solid band. And if a solid phalanx of the Hardware dealers of the several States presses forward together with the same object in view there is no telling the power we will have for good and fair treatment.

Since our association has grown in numbers and

JOSEPH M. SELHEIMER.

strength I do not want the members to grow lukewarm and think the once infant can take care of itself. I want you to look at the strength of some of our neighboring Western associations. They are not asleep. I want you to go to work and bring in new members and not leave all the work to the officers. Let us all talk to our neighbors; let us convince them that they should become members of this association, and that the brushing up against each other and the exchanging of ideas cannot help but be beneficial to all. There are none of us so bright that we cannot learn something from the youngest and least experienced among us.

MUTUAL INSURANCE.

The insurance feature of the association has been a remarkable success, giving to its members a safe insurance at a cost of 50 per cent. below the old line companies. I believe it is conducted on safe and economical lines and is deserving of the patronage of every member of the association. It is an adjunct of the association, and I think gladly accepts any suggestions of our members. I will take it for granted that such is the case and would here offer a suggestion to them—viz., that they so amend their by-laws that only members of the association can procure insurance. I well know that when the insurance feature was first talked of and started it could not have lived had not the insurance officials gone outside for business; but now it can. If I am not misinformed, all the Western States insurance companies

require that policy holders be members of some State Association. If the insured Hardwareman can save money through the work of our association, surely he should not object to paying $6 a year dues to us, especially in consideration of other benefits received. I think this amendment would very materially increase our membership.

CATALOGUE HOUSE COMPETITION.

I will not take your time in speaking of the catalogue houses. No doubt you will hear much about this subject before the convention adjourns. You all know that a vast amount of work has been done by the National Association on the catalogue question and are familiar with their work through the various trade journals and through the circulars sent you by manufacturers and jobbers which call attention to the fact that they refuse to sell goods to catalogue houses.

TRADE PAPERS.

The trade journals of the country should not be passed by without a word of thanks, as they have worked faithfully for the promotion of the retail Hardware associations. They have spared neither time nor brains in writing up our cause and making plain to all dealers

GEO. V. THOMPSON.

the benefits they can secure and advantages that are to be gained by association work. Their columns are always open for suggestions and letters from our people. We all know what our good friend, R. R. Williams of *The Iron Age*, has done for us heretofore. He has always been in attendance at our meetings, giving us gladly kind words, good advice and the benefit of his rich, ripe experience. May his shadow never grow less.

HONORARY MEMBERSHIP FOR TRAVELING SALESMEN.

I would suggest that an honorary membership be created for the admission of traveling Hardware salesmen into the association and have no doubt that their admission would add very much to the organization. The coming in contact with all the Hardware dealers in the State gives them the opportunity to do a vast amount of missionary work in talking up the association and soliciting members. They could also give us much useful information in regard to our business, for who has a better opportunity than the clean cut traveling man to secure Hardware knowledge with his constant brushing up against the brightest. In some of the Western States they are admitted to membership on the payment of $1 a year as dues. I would ask the Executive Committee to take this subject up, and, if approved by them, present it so that action may be taken on it at this meeting.

Secretary-Treasurer Digby's Report.

Following the president J. E. Digby, secretary-treasurer, made his annual report, which was printed last week. As treasurer he announced a much stronger financial position than that of last year, although much needs to be done to put the organization where it should be and make it adequately beneficial to the members.

What Constitutes a Jobber?

This subject was offered for discussion. The secretary said his conclusion was that at least $250,000 capital was needed to properly stock and conduct a *bona fide* jobbing business. The discussion covered a wide range, on the wisdom of jobbers trying to get the dealer's trade and then soliciting that of many of his best customers, such as cabinet and carriage makers, blacksmiths, carpenters, builders, contractors, mills, factories and others, especially when buying a few articles at a time. Traveling salesmen for jobbing houses were severely criticised for seeking the trade of such people after selling the retailer. As an instance of how much better such matters were regulated in the plumbing trade it was stated that salesmen for plumbers' supply houses in such cases were put under oath as to whether they had or had not so offended and proof of such transactions in disobedience of instructions was followed by punishment in proportion to the offense. The outcome of the discussion finally took the form of a resolution, which was unanimously adopted, that the members express themselves to the effect that "in distributing our patronage we give preference to concerns who sell goods to dealers only, and to notify the secretary of the State Association immediately upon proof of any such violation on the part of jobbers."

It was also resolved that the secretary instantly notify every member of the association when such a claim is not properly adjusted. It was sought to avoid any appearance of coercion or threat, but there was an unmistakable and strong sentiment among the members against jobbers selling both the dealer and his best customers, and that any method of removing this cause of complaint was worthy of attention.

Jobbing House Salesmen Elected Honorary Members.

The suggestion was made by a member that as traveling salesmen had shown great interest in the retail associations, frequently exhibiting more interest in their success than did some of the retailers themselves, they be admitted to honorary membership. Secretary Digby thereupon moved that salesmen of jobbing houses in Hardware, Stoves and kindred lines, and all who sell goods pertaining to the Hardware trade, be made honorary members on the payment of $1 yearly dues, which was promptly agreed to. The president observed that this recognition would indicate to such allies that their efforts in furthering the aims of retail Hardwaremen was appreciated. Following this action of the convention the following salesmen, who were present at the convention, were admitted to honorary membership:

J. H. Reed, J. H. Kroberger, Pittsburgh Stove & Range Company.
George H. Diehl, Lindsay Hardware Company.
A. R. Driscoll, J. K. Thompson, W. W. Lawrence & Co.
J. Welbley, Supplee Hardware Company.
John J. Haley, Jr., National Lead & Oil Company.
D. R. Branson, A. S. Bailey, E. C. Atkins & Co.
William E. Lore, Whitman & Barnes Mfg. Company.
I. Minor Dreisbach, Frank L. Dershem, C. Dreisbach's Sons.
S. McCleland, William K. Paff, New Jersey Wire Cloth Company.
William G. Withers, National Stove Company.
R. P. Searle, White Lily Washer Company.
F. W. Prothero, George R. Benjamin, Peters Cartridge Company.
C. R. Tendick, Majestic Stove Company.

E. H. Darville, representing *The Iron Age*, was also elected to honorary membership.

Future Dates for State Conventions.

A motion was agreed to that the association's representatives to the national convention when chosen be instructed to take up the question of future dates for annual meetings, in order to avoid conflict in dates with those of other State associations. The purpose here sought is to make it possible for the national officers and others to be present at conventions, which otherwise would be impossible if a number of meetings are held simultaneously.

Legitimate Hardware Dealers.

There was considerable discussion as to what constitutes a legitimate Hardware dealer. For example, some classes of tradesmen, such as painters, carpenters, machinists, &c., were often accorded privileges as dealers

from jobbing houses when they were more properly consumers, and as such legitimate customers of the Hardware retailer. The suggestion was made that jobbers selling such individuals should be exposed in the association and the complaint coincidentally submitted in writing to the secretary for action direct with the National Jobbers' Association, which was pledged by its secretary to give prompt attention and redress to such substantiated cases.

Report of Insurance Secretary.

The Wednesday morning session was devoted to insurance matters. W. B. Simpson, Huntingdon, secretary of the Hardware Dealers' Mutual Fire Association of Pennsylvania, presented his annual report, which showed a most successful year's business. The company was organized by the Insurance Committee of the Retail Hardware Association in the latter part of 1902, the first policies bearing date October 1, 1902. Its growth has been rapid, and the total insurance in force February 18, 1905, was $1,000,033, with cash on hand, or invested, $15,651.38, and no liabilities. The cost to members has been very low, averaging from the outset, about one-half of the cost of the same insurance in stock companies.

THE PLAN OF THE COMPANY

is in many features unique. It may be described as a cash mutual company. When a policy is written a cash deposit is taken at the regular board rate. At the end of the year the losses and expenses are divided up among the members in proportion to their deposits; one-third of the saving is carried to the guarantee fund surplus, and the remainder rebated against the next year's insurance. Thus if a member's deposit were $20, and his share of the losses and expenses counted up $5, there would be a saving of $15 on his insurance for the year and one-third thereof, or $5, would be carried to the surplus. The member would pay $10, and the original $20 deposit would stand to his credit unimpaired as against the next year's insurance. Whenever the insurance is terminated, whether by expiration or cancellation, all assessments must be paid up in full and the deposit is returned to the member. Thereupon his connection with the company ceases, and all liability on his part for any contracts of the company is at an end.

It will be noted that the assessments made up at the end of the year by dividing up the actual losses and expenses incurred represent the total cost of the insurance, as the deposit is returned when the insurance ends; also that the company has the cash as security for prompt payment of assessments, though the assured does not have to advance any more money than the amount he would pay at the outset if he carried the insurance in a stock company.

IN CASE THE COST RUNS HIGHER

than the stock company rate recourse is had at once to the guarantee fund for the excess. The by-laws provide carefully and specifically just when and how much shall be carried to or taken from the surplus, instead of leaving these very important matters to the judgment or caprice of the Board of Directors. Thus, in the year 1904 the assessments collected were $4702, being at the rate of 49½ per cent. of the deposits on the policies assessed, and of this sum $2814 was for loss and expense account and $1888 carried to surplus.

The insurance is well scattered on limited lines, and the risks are of the best character, as is to be inferred from the smallness of the losses incurred since organization of the company. The company is run strictly on a business basis, accounts are carefully audited annually, corporation security given by the treasurer and the assets carefully invested. The secretary is a practical insurance man of long experience, and the directors and other officers are Hardwaremen of standing and business capacity.

SUBSTANTIAL SAVING.

In the general discussion that followed a number of members attested their appreciation of the substantial saving they had made on their insurance and special attention was called to the fact that this is one of the benefits the trade has received through the Hardware Association, and the hope was expressed that the privilege of insurance will in turn be a strong lever to bring many new members into the association.

At the annual meeting of the company in January the old Board of Directors was re-elected, and at the meeting of the directors February 22 the former officers were also re-elected for the ensuing year.

Officers for 1905.

The Nominating Committee submitted the following officers for the ensuing year, who were unanimously elected:

PRESIDENT, George V. Thompson, Mt. Jewett.
VICE-PRESIDENT, J. H. Bowers, Charleroi.
EXECUTIVE COMMITTEE: J. M. Selheimer, Lewistown; J. E. Digby, McKees Rocks.
George L. Moore of Brownsville was chosen representative to National Association.

Next Meeting Place.

George L. Moore, chairman of the committee appointed for that purpose, reported in favor of Williamsport. This city was accordingly chosen for the 1906 convention.

Votes of thanks were given to the Committee of Arrangement for its services and to *The Iron Age*.

J. H. BOWERS.

After an interesting and instructive address on association matters by S. S. Bryan of Titusville, brief remarks of a congratulatory character by E. J. Lloyd of the Bindley Hardware Company, Pittsburgh, and the announcement that the Executive Committee had re-elected J. E. Digby as secretary-treasurer, the convention adjourned.

The Banquet.

The customary banquet was held Wednesday evening, the company, among whom were many ladies, assembling in a large upper room of the convention building well adapted for such purposes. George L. Moore very acceptably discharged the duties of toastmaster. There were addresses by E. J. Lloyd of the Bindley Hardware Company, W. B. Simpson of the Insurance Company and James H. Reed, representing the Pittsburgh Stove & Range Company. A good orchestra rendered numerous selections throughout the serving of the dinner and the occasion was very much enjoyed.

Members of the Pennsylvania Association.

Following is a list of the members of the association:

Alter, Jno. W., East Pittsburgh.
Albee & Seitz, Galeton.
Anderson Hardware Co., New Bethlehem.
Buckholdt, W. A., Charleroi.
Bergstresser, S. E., Mt.Carmel.
Bowers, J. H., Charleroi.
Bidaux, F. A., Titusville.
Bodine, Geo. A., Bradford.
Baumann, Jacob, Pittsburgh.
Braddock Hardware & Supply Co., Braddock.
Boreland Bros., Washington.
Bantley, Albert G., Windber.
Bond & Cooper, Brockwayville.
Buoy, John Y., Milton.
Beck & Corbitt, Waynesboro.
Bubb, C. H., Muncy.
Bowen, S. E., Ridgway.
Brierly, F. F., Beaver Falls.
Beaver Hardware Co., Beaver Falls.
Berkey, T. L., Bolivar.
Bryan, S. S., Titusville.
Coulter, John H., Brownsville.
Casselberry, A. Q., Pittsburgh.
Cover, P. J., Meyersdale.
Craig Hardware Co., Mars.
Compton, S. R., Harrisburg.
Conn, I. N., Point Marion.
Craft, D. N., Uniontown.
Calvin, S. B., Mt. Pleasant.
Cockburn, James, Williamsport.

Crowall, Theo., Kane.
Cunningham, Jas., Dushore.
Cole, J. H., Danville.
Cordell, J. R., Patton.
Clairton Hardware Co., Clairton.
Creekside Hardware Co., Creekside.
Darsie, E. H., Donora.
Dickson & Co., New Castle.
Digby & Smith, McKees Rocks.
Donaldson, J. S., Beaver.
Dewey, E. L., & Co., Waynesburg.
Dick, J. I., Scottdale.
Difenderfer, W. P., Lewisburg.
Dobbins, Jno. E., Troy.
DeVor, H. C., Monongahela City.
Davidson, W. J., Beaver Falls.
Everts, E. D., Corydon.
Elmer Hardware Co., Galeton.
Elliott, W. J., Canonsburg.
Eicher & Graft, Scottdale.
Edmunds & William, Braddock.
Fulton & Maggini, Braddock.
Fox, L. C., Irwin.
Fry & Gilmore, Uniontown.
Frisbee Hardware Co., Connellsville.
Fear, Geo. E., Brownsville.
Frye, J. F. Belle Vernon.
Fleming, R. R., & Co., Houtzdale.
Franklin Hardware Co., Franklin.
Fredericks, J. H., & Bro., Lock Haven.
Franciscus Hardware Co., Tyrone.
Griffiths, R., Girardville.
Gregg, Albert M., Monongahela City.
Greensburg Hardware Co., Greensburg.
Gunn Tool & Supply Co., Pittsburg.
Glessner, H. S., Meyersdale.
Growall, A. J., Rockwood.
Grove Bros., West Milton.
Guss & Sieber, Mifflin.
Gilbert, Henry, Harrisburg.
Gilbert & Gordon, Waynesboro.
Gilbert & Son, New Oxford.
Grant, Thos. P., Charleroi.
Goldinger, G. W., & Co., Tarentum.
Gillespie, T. T., Homestead.
Holderbaum, J. B., Somerset.
Hare, E., & Son, Fayette City.
Hackett, Geo. W., Sunbury.
Howe, Jno. F., Freedom.
Hegner, Geo. H., Sewickley.
Hays & Coulter, Swissvale.
Hayes Carriage & Hardware Co., Ltd., Union City.
Heim, W. H., Sunbury.
Holmes & Gilfillan, Smethport.
Hewitt, A. V., Punxsutawney.
Huntley, Geo., Ebensburg.
Heath & Martin, New Bethlehem.
Hastings, W. P., Washington.
Inscho & Inscho, Tioga.
Jones & Co., Phillipsburg.
Kellerman, L. F., McKees Rocks.
Kernochan & Co., Titusville.
Kline & Co., Williamsport.
Keefer, D. B., & Co., Greencastle.
Keystone Hardware Co., Reynoldsville.
Kramer, M. H., Hyndman.
Linck, J. H., Williamsport.
Lindsay, J. T., Bellevue.
Little, J. A., Washington.
Lieb, A. W., Williamsport.
Lindley & Ronan, Canton.
Love, David F., Montgomery.
Loucks Hardware Co., Scottdale.
Lohr, Geo. W., Irwin.
Lowe, J. A., & Co., Braddock.
McKnight, Samuel, Allegheny.
McCurdy, T. S., Monongahela City.
McKean, J. S., & Sons, New Kensington.
Moore, Geo. L., Brownsville.
Miller, C. H., Hardware Co., Huntingdon.
Munnell, Samuel, Canonsburg.
Mendelssohn & Clairton Hardware Co., Wilson.
Miller, Arthur L., Uniontown.
Maloney, J. J., & Son, Hughesville.
Mendenhall, S., & Son, Montoursville.
Miller, J. H., Somerset.
Nelson, E., Gallitzin.
Neyhart, A. B., Williamsport.
Newman, F. E., Johnstown.
Nebo Bros., Homestead.
Oakland Hardware Co., Pittsburgh.
Olewine, Jno. I., Bellefonte.
O'Brien, T. J., Latrobe.
Orr Hardware Co., Homestead.
Poellot, H., & Sons, Bridgeville.
Paul & Post, Washington.
Peltz, E., Cross Fork.
Phillips, W. H., Mt. Carmel.
Powell, J. Frank, Clearfield.
Powell & Bigler, Clearfield.
Punxsutawney Hardware Co., Punxsutawney.
Reid Bros., Braddock.
Rudolph, Geo. J., Pittsburgh.
Raup, H. Judson, Milton.
Rowbottom, Geo. W., Jr., Allegheny.
Ray, S. & L. S. W., Blairsville.
Redfield, H. H., Smethport.
Rohrer & Rhinehart, Waynesboro.
Richards & Richards, Oil City.
Robinson Hardware Co., Punxsutawney.
Stevenson, A. N., Renova.
Selheimer, J. M., Lewistown.
Seaman, Jno. W., Washington.
Spragg, W. H., & Son, Donora.
Shipley Hardware Co., Meyersdale.
Shroyer, C. O., Dawson.
Savage, C. N., California.
Sloterbeck, J. P., & Son, Fayette City.
Steuler, John, Millvale.
Salisbury, L. H., Albion.
Steele, Chas. H., Charleroi.
Smith Hardware Co., Kane.
Salyards, M. D., Pitcairn.
Scarborough, Klauss, Pittsburgh.
Smith, Max C., Pittsburgh.
Smith Bros., Pittsburgh.
Solenberger, A. F., Chambersburg.
Sniveley, Rider, Harrisburg.
Stainer, Thos., Hazelwood.
Sprowls, Geo., Claysville.
Schell Hardware Co., Somerset.
Smith, Hutton & Kirk Co., New Castle.
Stewart, J. M., & Co., Indiana.
Shirk, A. L., Chambersburg.
Sanders, J. Henry, & Son, Gettysburg.
Strickler, C. R., Columbia.
Strong, W. H., Milton.
Straitiff, L. F., Tyrone.
Stevens, J. A., & Co., Mt. Pleasant.
Smith, W. H., & Son, Mt. Pleasant
Steffey, S. D., & Son, Blairsville.
Swank Hardware Co., Johnstown.
Snook, S. A., Johnstown.
Shetting Bros., Ebensburg.
Spinner, Wm., Warren.
Shumaker, Ringer & Foster, Jeanette.
Thompson, Geo. V., & Co., Mt. Jewett.
Taylor Hardware Co., Allegheny.
Trissinger, C. W., & Co., Berlin.
Tanger, J. C., The, Hanover.
Temple & Sons, Greensburg.
Taylor, A. T., & Son, Indiana.
Unger, G. C., & Co., Lebanon.
Vandyne, C. B., Muncy.
Van Dyke & Co., Lock Haven.
Wilson Hardware Co., Belle Vernon.
Wickenheiser & Harmon, Coraopolis.
Wilson, Wm. L., Jersey Shore.
Wurster, L., Williamsport.
Wylie Bros., Elizabeth.
Welch, A. S., Mt. Union.
Wagner, M. N., Carlisle.
Wells, J. G., Bloomsburg.
Weaver, F. B., Falls Creek.
Wrigley Hardware Co., Mahaffey.
Young & Madquick, McDonald.
Young, H. B., Mifflinsburg.
Davis, J. M. & Sons, Oakland, Md.

Exhibits.

WHITE LILY WASHER COMPANY, Davenport, Iowa, represented by R. P. Searle, displayed a 1905 machine, which fell by lot to one of those present at the close of the convention.

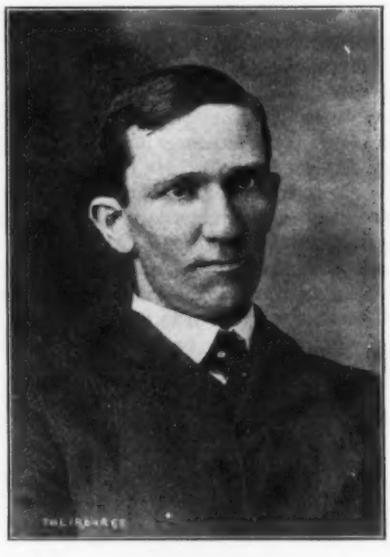
PETERS CARTRIDGE COMPANY, Cincinnati, Ohio, was represented by George R. Benjamin, who distributed a souvenir button and stick pin, .22 Cartridge.

W. W. LAWRENCE & Co., Pittsburgh, Pa., manufacturers of Mixed Paints, Carriage Paints, Aluminum Enamels, &c., and represented by A. R. Driscoll and J. K. Thompson, distributed literature, samples and a flat blued Key Ring.

THE PITTSBURGH STOVE & RANGE COMPANY, Pittsburgh, represented by James H. Reed and J. H. Kroberger, distributed vest pocket lead pencils in bronze cases.

E. C. ATKINS & Co., Indianapolis, Ind., whose interests were looked after by D. R. Branson and A. S. Bailey, supplied the members with Aluminum Pocket Combs resembling a Hand Saw in shape and contained in a black case.

THE NEW JERSEY WIRE CLOTH COMPANY, Trenton, N. J., represented by S. McCleland and William K. Paff, had the members photographed in a group with a view to sending them later each a picture as a souvenir of the meeting.



W. B. SIMPSON.

MAJESTIC MFG. COMPANY, St. Louis, Mo., had one of their Majestic Steel Ranges on exhibition, in charge of their representative, C. R. Tendick.

THE H. D. SMITH & Co., Plantsville, Conn., sent enough of their Perfect Handle Screw Drivers to liberally supply the entire convention.

Many prominent manufacturers not represented personally at the convention were liberal patrons of the advertising space in the 40-page illustrated programme of the convention, which was tastefully gotten up, many beautiful views in and about Harrisburg being reproduced.

REQUESTS FOR CATALOGUES, &c.

FROM THE NASHVILLE PLUMBERS' & MILL SUPPLY COMPANY, Nashville, Tenn., which has recently been organized and incorporated. The president is Whitney G. Case; vice-president, Joseph P. Fell, and secretary and treasurer, J. M. Means. The company will do a strictly wholesale plumbing, mill and factory supply business, having machinery necessary to thread and get out pipe and fittings to order. The company expects gradually to cover an extensive territory and desires catalogues from manufacturers of the various lines in which it is interested.

FROM CRUTCHFIELD, RUCKER & ANDERSON, who began business at 145 Second avenue, North, Nashville, Tenn., in January, as jobbers in Iron, Heavy Hardware, Farm Implements and Field Seeds. Mr. Crutchfield was for some years a member of the Hardware house of Keith, Simmons & Co., while Mr. Anderson was for some years with the Seed house of L. H. Hitchcock, both of Nashville.

Missouri Retail Hardware Dealers' Association.

CONCLUDING REPORT.

GENUINE interest, earnest endeavor and confidence in future success marked the convention of the Missouri Retail Hardware and Stove Dealers' Association held in the rooms of the Commercial Club, St. Joseph, February 21 and 22. The convention surpassed that of any previous year in attendance and enthusiasm, a large amount of work being transacted during the two days in which the Hardwaremen held the keys to the city. The attendance was both large and representative, over 100 members signing the roll call.

Catalogue House Competition.

At the Tuesday afternoon session F. E. Muzzy, vice-president of the J. Stevens Arms & Tool Company, Chicopee Falls, Mass., opened the programme with an address on the "Catalogue House Question." Mr. Muzzy told of the fight waged against the mail order houses by his firm, and suggested methods of counteracting their damaging influence on retail trade.

He was followed by J. A. Warner of the Wyeth Hardware & Mfg. Company, St. Joseph, who addressed the convention, as follows:

J. A. Warner's Address.

It seems to me that this agitation has had one effect at least which is going to be of benefit to the retail dealer—namely, that it has aroused him to the importance and the necessity of making a stronger effort for the business in his community—going after the same instead of waiting for it to come to him; keeping in stock at all times profitable novelties and specialties and displaying same in a manner to attract attention; giving more care to the dressing of show windows and changing the display at frequent intervals.

I firmly believe that if the retail dealers of the country would use the same amount of energy and copy to some extent at least the methods of the catalogue houses they would be able, in a great measure, to counteract the evil effects of their competition.

IF YOU HAVE SOMETHING TO SELL

it is well to let the public know it through the medium of your local newspapers or by means of circulars. I have even thought that it might be practicable to issue a small catalogue illustrating certain lines of goods which bear a good profit and which you are desirous of pushing. You do not find the catalogue houses making a very strong talk on Nails, Barbed Wire, Rope and other unprofitable goods. They are after the profitable business, and in this respect at least their methods might be copied by the retail dealer with profit. The staple items will take care of themselves. If John Smith wants a few pounds of Nails he knows that the Hardware dealer has them and will go to him for them. However, Mrs. John Smith may not know that you have a Bread Maker, Sewing Machine or other household article which she no doubt needs, if you will only make an effort to convince her of the fact. If your goods are arranged in an attractive manner she may find other items that she is equally in need of. If you advertise in newspapers change the matter frequently and always advertise goods that are seasonable at the time. Some dealers will contract for space by the year and never change the wording of their advertisement, which is a great mistake. Advertising is expensive, and you should get as much as possible for your money by calling attention to as wide a range of articles as possible.

STUDY THE C. H. CATALOGUE.

Every dealer should have the latest copy of the catalogue house catalogue on his desk and it should be studied carefully so that he may obtain a good idea of the goods carried by these houses and the prices at which they are sold. In a great many cases it will be found that these prices can be profitably met, taking into consideration the transportation charges and the fact that cash with order is invariably demanded. In this connection it might be well to state that if you can yet your business on a strictly cash basis you will find it a great help to enable you to meet catalogue house competition. Another advantage of being familiar with the goods sold by catalogue houses is that you may avoid as far as possible carrying the same lines. It is to be regretted that many standard brands of goods are sold by these houses, but we believe the time is not far distant when they will be fewer than they are at present.

The work done by the joint committee of the National Retail Hardware Dealers' Association and the National Hardware Association is beginning to bear fruit, as those of you know who have kept in touch with the situation. It is not to be expected that the catalogue houses will be driven out of the Hardware business. Their business is legitimate, even if their methods are not. However, I believe it is possible for the manufacturers who sell these concerns to regulate the prices at which their goods shall be sold to the consumer, and if this is done it will be a

TAYLOR FRIER.

long step in the direction of the solution of this vexed question.

Novel Methods of Advertising.

The following paper entitled "Novel Methods of Advertising," by H. W. Beegle of Chicago, was read by Wm. H. Hahn of St. Louis:

Why does not the Hardware dealer supply all the needs both known and unknown which the people have in this line? First, many of the goods are on the shelf and not in the window, on the counter or in the newspaper, so the people are unacquainted with their merit. Second, the grocer, the druggist and the dry goods man, being more enterprising than the Hardwaremen, have captured some of this business.

There is need of the members of the Hardware fraternity to increase, first, the number of their regular customers, and second, the purchase of each. We will presume that your stocks contain all they should in the way of staples and have complete assortments of such kindred goods as appeal to the people. Every stock must be in advance of the inquries of the public. The successful merchant is always willing to show goods that will supply a need, even if he has not had an inquiry. The need exists even if it has been unknown. You cannot advertise or sell goods you do not have. Having your stock right, the next thing is to get the public acquainted with you and to buy your goods. We call such work advertising. There is probably more of the

unknown quantity in advertising than in anything else the dealer has to do with. A man frequently thinks he is advertising when he is only spending money. Above all, advertising requires patience. Results are not brought about at once.

ATTENTION TO LITTLE THINGS.

We do not build health, intellect or business by leaps and bounds, but by attention to little things. In western New York is a very successful Hardware merchant who prides himself on the fact that he has never advertised. In seeking for a cause of his success I found out that he knew every man, woman and child for miles around. He had a hearty handshake and a genial salute for each. Also that same atmosphere pervaded his entire force. He has reduced it to a system, and I consider it an excellent, if a novel, method of advertising. From the fact that every man and woman regardless of their station in life are more susceptible to an appeal that is addressed to them personally than they are to one made to the world at large, the tongue is an excellent medium of advertising. It can give more or less emphasis as may be needed

WM. H. HAHN.

for each individual. It may put each hearer in a good humor, so that the hearer will be more receptive.

But, says some one, it is not my nature to be sociable. If any one feels that way he should forget it, and take as his doctrine that every man can be what he wants to be if he wants to be what he ought to be.

PEOPLE EVERY DAY ARE BECOMING MORE FASTIDIOUS.

A dirty, gloomy, poorly arranged store, that store where dust is on the goods and you bump your knees against the nail kegs under the counter, is patronized only because of necessity, not from preference. It should become "Warrenized" or the trade goes elsewhere. Not only do the people like clean stores, but they like clean salesmen to wait on them. They do not like to see either the collar or the finger nails in mourning. In these days of abstinence practically every woman and many men object to tobacco. Your customers are individuals frequently with peculiarities. There is money in having each of these individuals pleased. A man whose annual business runs into the millions said: "The best advertising is in giving the biggest bunch for a dollar." That does not always mean the goods at the lowest price. You may give value in service, courtesy and attention. If the store is dirty, unpleasant, badly managed, nothing is paid for service.

"THANK YOU."

It is such a novelty for a salesman to say to me, as I pay for a purchase and am leaving, "Thank you, call again," that I appreciate it and do return when I can. This novelty costs nothing and is appreciated by 90 per cent. of buyers.

Some years since my wife sent me to purchase some bakery goods. I was instructed to go to a shop about two blocks further than the one at which we had generally bought. Of course, I obeyed, but I could not help but meditate as to why we should constantly wear out so much shoe leather in covering the two extra blocks. After a careful and adroit investigation I found that the real reason of changing our trading place was because of a cheerful, pleasant smile which was given with each cake without extra charge. The pulling power of a genial atmosphere in any business establishment cannot be overestimated. I have been in Hardware stores where the attitude of every one, from the proprietor clear down the line was as repellent as a London fog. There is no excuse for "grouchiness" nor indigestion, for it can be cured; least of all, poor business, because sulking will make it worse. Inattention to customers is the weak link that loses business.

The employees in no other line of business will average as high in intelligence and ability as those found in the Hardware store. It is the boy, vigorous in body and mind, who takes to Hardware. He should understand that unless he concentrates his mind and heart on his business, so as to know it from pincers to pans, from razors to rasps, he will never get into the prosperity class.

Is space in the Hardware store too valuable for some chairs—not for loafers, clerks or drummers, but for a customer who is not in a hurry to leave? If a woman can sit down and study your washing machine as restfully as she can study the mail order catalogue she is more likely to see the points of advantage in your machine. Besides, some people like to go to stores where they are not expected to leave immediately after spending their money.

DON'T WAIT FOR IDEAL CONDITIONS.

They never come. You must make them. If a catalogue house several hundred miles distant is securing the business of your friends and neighbors it is up to you to show more interest in them than does the catalogue house. Do you not think that a clean, well arranged Hardware store with a good stock at right prices, which is pervaded by a genial, cheerful atmosphere, where goods are intelligently and courteously shown, would have a constantly increasing number of regular customers?

I have already stated that people had many needs which they had not yet discovered. You also recall that there is a necessity for increasing the purchase of each customer. Let us meet this last necessity by discovering to the people the many needs which we can supply.

TWO PROFITS.

There can be two profits made out of a customer—the one on the goods he intends to buy, the other on such goods as you interest him in. Nothing booms business like showing new goods.

At a convenient location in the store, one which must be passed by all, have each week a new article which will interest the women; also one that will interest the men. Then let the merit and utility of these articles be given in a most condensed form to each salesman. Make it a point not to let any one out without securing at least a passing notice of these new things. This may not result in immediate sales, but the people will appreciate your courtesy and attention. You establish a reputation for enterprise and having new goods. The woman who saw the beautiful serving dish in March will remember it when she has to buy a wedding present in October. But you say it is difficult to keep this up. Let us remember that difficulties overcome are rounds in the ladder that leads to success. Don't let the big things dismay you. Remember that they are composed of little things, each of which can be overcome, thus overcoming the large things.

Stove Troubles Up to Date and Remedies

was the subject of a paper by F. P. Haus of St. Louis, a veteran in the Stove business. The article in part was as follows:

I was notified by our worthy secretary that he had me down for a paper on "Stove Troubles and How Best to Meet Them." I will begin by saying the best way is not to meet them if possible, and I believe this could often be done when selling a Stove or Range if the dealer

was not overanxious to make the sale, and, in order to do so, make guarantees that no maker ever puts on the goods. Remember, "An ounce of prevention is worth a pound of cure."

No Stove or Range ever made has of itself what is called a draft; that must be furnished by the chimney or flue, which is to the Stove or Range what the team is to the wagon. And even when the draft in chimney or flue is perfect, that is not all that is wanted to insure good work or good bread or biscuit; the other things necessary being proper setting up, good fuel, good materials, and last, but not least, a good cook. I had a customer years ago who would never guarantee a Stove to bake well, and when the lady would ask why he wouldn't guarantee the Stove to bake well after saying the Stove was a good baker his answer would be: "I know the Stove is a good baker, but I do not know if you know how to bake or not," and there is a lot that hinges on knowing how in baking, as in everything else.

So in making a sale do not make any unreasonable guarantees or promises. To obtain the best results there is needed a good flue or chimney, proper setting up with pipe, full size of collar on the Stove or Range, good fuel and, as stated before, a good cook to run it.

DEALER'S MAN SHOULD SET UP THE STOVE.

When possible the dealer should set up every Stove or Range he sells, and the man doing this work should not be the cub or the poorest workman about the place or shop. He should know enough about the business to know if the flue he is going to use has a good draft or not, and, if not, should so tell the party buying the Stove or Range and if possible correct the trouble before leaving the job. If this were always done there would be fewer kicks afterward.

When a Stove or Range goes into the country where a man cannot well be sent to set it up, instruct the buyer as far as possible how to set it up and what faults to avoid. Many of the manufacturers have booklets or circulars on this subject that they would be glad to furnish if they knew they would be used.

HANDLING COMPLAINTS.

I suppose as long as Stoves and Ranges are sold there will be complaints, and when they come in they should be looked after at once, and it is well to go yourself or send a man who knows the business. The first thing I do in such cases is to fire up the Stove or Range to see for myself just how it burns. And right here I want to say, listen patiently to everything the lady has to say and draw out all you can, so as to learn just what she has against the Stove or Range, and at times I have found a nigger in the woodpile without going any further.

Be very careful never to contradict her in anything she says; at the same time be just as careful never to believe all she says. By this I do not mean to say or to intimate she will make a statement that she does not believe to be true, for as a rule she does not, but she is liable to be mistaken and I have found often is.

If there is a baby or a little one around you can as a rule do no better thing than make friends with it and find out that it is a smart one, and when you have found this out do not hide the fact from its mother. I have found this generally works well.

Go about the job as if you had heard nothing. If you find the fire does not burn well, examine the flue and see if that has a good draft. If not, locate the trouble and remedy it if possible, because a good draft is absolutely necessary to good work. Next, look to the fuel, and remember that you cannot get a hot fire from wet or rotten wood, as the heat used in evaporating the water in green or wet wood is lost to the oven; nor can you get a hot fire from poor coal, especially when mixed with dirt. Then see that the ashes are kept away from the bottom of the fire and from under the grate, allowing the air to pass freely through the fuel, as air is as necessary to a fire as is the wood or coal. All air entering into the fire box should pass under and through the fuel, as any air that passes over the fire checks it and at the same time cools the oven, so I would say always keep the damper slide in the front fire door closed, and it would be better (in my opinion) if no damper slide was put in the front fire door. Get all the air necessary into the fire box by drawing out the hearth slide, as in so doing the air is put to the bottom of the fire where it belongs. But while air is necessary to combustion, like in everything else, there may be too much of a good thing. Only one-fourth of the air entering the fire box is oxygen, the only thing that counts, while the other three-fourths is made up of neutral gases that contribute nothing toward combustion, but have to be heated at the expense of the oven, so that while it is necessary to admit all the air into the fire box that is needed to make the fire burn well, no more should be admitted than is needed to keep the fire burning well. And as no two flues draw exactly, nor the same flue draws alike every day, but changes as does the weather, the amount of air to be admitted to do the best work can only be learned by experience, as any good cook will tell you, and that is why an oven will get hotter one day than another, using the same kind and the same amount of fuel.

Almost if not all Stoves or Ranges turned out to-day, except those sold by the catalogue houses (remember that), will work if set up properly to a good flue and good fuel is used, and the cook running them knows his or her business.

WHEN YOU HAVE A COMPLAINT

don't write, as some have done, saying, "We have sold one of your Stoves or Ranges and it is not giving satisfaction. What would you suggest, or shall we ship it back?" &c. See to it yourself first, and if you cannot locate the trouble then write what you have seen and what you have done to remedy the evil, and not what the party that is making the complaint has said. Any first-class maker is always ready and willing to help you out, but he expects you to do your part.

The Science of Hardware.

One of the most interesting and forceful addresses of the convention was that of John Hall of the Simmons Hardware Company, St. Louis. His subject was "The Science of Hardware." Mr. Hall declared it was a science which had no college, no professor, or ever turned out graduates; it was the science learned in the school of hard knocks, the great school of life where experience was the teacher; it never turned out graduates because a man never completed his education in it. The few who imagined they did found invariably that they still had several post graduate courses coming to them. Mr. Hall declared he spoke from 30 years' experience, in which he had studied conditions existing in the Hardware trade in nearly every country in the globe. The same conditions practically rule everywhere, was his opinion. The white man, the red man or the yellow man acts in the same manner when considering a purchase. "Prices never sold a dollar's worth of goods," he declared.

KNOWING HOW,

he said, was the foundation of the science of Hardware. A salesman should always know his goods a little better than his customer. Train your clerks, was Mr. Hall's earnest plea to the Hardwaremen. Make them know how, for upon them rests the question as to whether present conditions shall continue to exist or Hardware stores in the future will find their homes under the roofs of department stores.

An Appeal to Manufacturers and Jobbers.

O. W. Johnston of Marshall addressed the meeting as follows:

For fear our continued, unrelenting and organized efforts against catalogue house competition may not be rightly understood by some manufacturers and jobbers and the public at large, we desire to state clearly and most emphatically our position, setting forth the principle and we think just and reasonable grounds for our opposition. In this land of the free and brave, living under the best Government on earth, which guarantees to every citizen alike the peaceful pursuit of his chosen profession or trade, we have no desire to do violence to this sacred principle so dear to every American heart. No institution, order or association can succeed, and should not, which is guided by greed and selfishness rather than justice and truth. To question the right of

any man or set of men to engage in business and solicit patronage from any section of the country in a legitimate way, either by catalogues, newspapers, circulars or representatives, would be to question the efficiency and justice of our own system of government. In our appeal to manufacturers and jobbers we do not seek to destroy or injure the men who sell their goods through catalogues, but insist upon another principle of our Government—equal rights to all, special privilege to none. Can the retail dealer meet the catalogue price on an article that you charge him $1 for and sell the same to the catalogue house for 85 cents? It is this unfair and unjust discrimination that we are offering our solemn and determined protest against. Some of our jobbing friends have suggested that we discontinue selling the established factory brands and put in jobbers' or special brands on which we can get protection. We cannot accept as a practical and righteous solution a plan which places the retail Hardware dealer in a false position. Should he claim his article to be as good as the one offered by

O. W. JOHNSTON.

the catalogue house, when in fact it is not, how long could he hold the trade or confidence of his customer? We ask for no advantages or special favors over any competitor, but insist that you charge the large catalogue houses and city department stores the same price you do us and allow no rebates. Our Government by her interstate commerce law recognizes the principle as just and will not permit the railroad companies to discriminate between the small and large shippers. All corporations controlled by national, State or city laws are prohibited from discriminating in favor of any class, rich or poor, high or low. We only ask that you enforce this righteous principle of law in marketing your wares to all retail dealers. Should this discrimination be continued it would only be a few years until the retail Hardware dealers would be driven out of business, our prosperous and busy little cities all over our land reduced to hamlets, while six or eight large corporations would control the entire trade of our country. With this state of affairs where would the jobbers be? Would the manufacturers prefer one dozen or less large corporations as their only customers, who could so easily combine and set their own price on the manufacturers' goods? Since the solution of this question lies wholly with the manufacturers and the jobbers, we hail with delight the firm stand and interest manifested in our behalf by so many leading manufacturers and jobbers, and we call upon every loyal retail Hardware dealer to stand by those who are helping us in this struggle, remembering that ingratitude is the basest of all crimes.

In the evening at 7.30 o'clock A. F. Sheldon, principal of the Sheldon School of Scientific Salesmanship, Chicago, made an address entitled "Science of Salesmanship." The lecture was interesting and instructive and was listened to with close attention.

Banquet.

Subsequently the visitors sat down to a banquet at the Metropole Hotel provided by the local jobbers and retailers of Hardware and the Entertainment Committee of the Commercial Club. M. D. Ayers was toastmaster. After short speeches by President Frier and Secretary Neudorff the principal address of the evening was given by George M. Johnston of St. Joseph, who responded to the toast "The Local Jobber." Mr. Johnston pointed out that the jobber and retailer have need of each other and that their relations should be harmonious. Other speakers were: M. E. Mayer of the Commercial Club, St. Joseph; O. W. Waller, South St. Joseph; S. P. Johnston, Chicago, and A. F. Sheldon, Chicago. Singing and monologue specialties were enjoyed in addition to the speechmaking, and it was after midnight when the banqueters finally arose.

Garnishment Law.

Wednesday morning's session opened with discussion of the Garnishment law, laid over from Tuesday. Frederick Neudorff, M. D. Ayers, President Frier, Frederick Kansteiner and G. A. Pauly took part in the discussion. The unanimous opinion of the speakers was that the Missouri Garnishment law was a great boon and a practical benefit to merchants throughout the State. This was already a proved fact by the old accounts which had been collected from people who could never have been reached in any other way. "Deadbeats have been practically done away with," said Mr. Neudorff, "and many people now respect their debts who never did before." It was asserted that fully $500,000 worth of old accounts had been collected in the State of Missouri during the past two years under the provisions of the law. The association was largely instrumental in securing the passage of this measure.

Question Box.

The Question Box occupied the time of the convention the greater part of Wednesday morning. Among the questions discussed were the following:

Should the retailer patronize jobbers who supply goods direct to his customers?

The emphatic answer was "No."

How can we prevent the jobber selling to consumers?

The opinion prevailed that all retailers on finding out the jobbers who were selling to consumers should not purchase from them another dollar's worth of goods.

How can we eliminate the ruinous competition brought about by farmers' telephone lines bringing into competition dealers in neighboring towns?

What means can be adopted to bring neighboring Hardware dealers to a mutual understanding that will insure a living profit and create a better fellow feeling?

The formation of local associations was urged.

Are there not too many traveling salesmen for the economical distribution of Hardware and for the good of the people in general?

P. F. Haus, St. Louis, voiced the opinion that that particular question was not one which need worry the retailer. The jobber is the one to worry. When he finds he can sell Hardware without sending out salesmen he will call them off quickly enough.

What is the best way to meet the competition of general merchants who have bargain counters of Tinware, Cutlery and other articles of Hardware and sell them at cost in order to draw trade?

The solution which presented itself to many was for the retail Hardwaremen to follow suit and meet their competitors halfway in the fight.

Mutual Insurance.

At the final session on Wednesday afternoon Frederick Neudorff, secretary of the association, and also of the insurance company, as a preliminary to his paper, given

below, showed from the report of the State Insurance Commissioner that over $7,500,000 was paid out in premiums for insurance in Missouri during 1904, and that the net losses were a trifle under $2,500,000, showing an excess of $5,000,000 to the insurance companies. This statement, Mr. Neudorff declared, was worth several tons of argument in favor of mutual insurance. Mr. Neudorff's report was as follows:

Having had the direct work of your Insurance Department to look after, it is perhaps most fitting that some of the impressions obtained be given to you in such form as to permit your further investigation and thought, with the result, let us hope, of evolving some genius of insurance matters from among our number who will be able to reconcile the amazing inconsistencies of the business. To my mind it presents such grotesque features as to closely resemble the absurd. There seems to be no basis or rule for anything in this business except the payment of losses. If there are any scientific facts connected with the business I am unable to locate them. It more closely resembles a game of chance or gambling than any so-called legitimate business proposition which I know anything about, and my conclusions are that if there exists anywhere in Missouri a necessity for legislation greater than is presented by this necessity of establishing fixed rates on insurance risks I do not know where it can be found. That there ought to be a fixed and legitimate basis for insurance charges no one can deny. Our State Government some years ago fined the insurance companies some $130,000 for forming a trust on maintaining insurance rates. I venture the assertion that the public who pay for insurance will pay this fine with interest. You have all no doubt noticed and been struck with the beauty of the system which enables the insurance companies as a result of any great loss to advance the rates for insurance on all of us to make their losses good to their stockholders.

Mr. Neudorff then went on to give illustrations supporting these statements. Continuing, he said:

An investigation of the risks we carry will show an amazing discrepancy in rates. Your secretary has been very careful in accepting risks and has rejected quite a few in your interest. We have in this State a bureau under control of the old line companies which aims to fix an equitable rate on all insurance risks in the State, and this rate is referred to in our contracts and agreements with our members as the "board rate." It is just and equitable, especially in a mutual company, that all settlements of losses be made on the basis of the amount we pay as it bears relation to this board rate. No other rule is just, right or honorable among partners. To explain more simply our proposition we will state that any member who reports his rate at $1 and pays this amount must accept payment of one-fourth his loss if his true rate is $4. Personally I will state that I buy my insurance at $1.10, but I pay our Mutual $1.30, which is my board rate. I had an application from a brother member who objected to his board rate of $5 and was willing to pay $3.50. I wrote him that I would write him at $3.50, but would settle his loss in case of fire at the ratio that 3½ bore to 5. The Missouri Inspection Bureau will furnish us rates outside of St. Louis and St. Louis County at 50 cents per item, but the minimum charge would be $50 per year. The Wisconsin Hardware Mutual requires each policy holder to have at least a $500 policy with a board company and in this manner fixes the rates. Another feature about this rate matter is that risks are fixed by the nature of the surroundings, which is constantly changing, especially in new and growing towns. Many of your policies require you to notify the companies of any such changes, and should loss occur the question of noncompliance with this rule vitiates your chance of recovery.

These are some of the matters requiring your attention. We ought to get a definite basis of fixing rates. We ought to subscribe to a Mercantile Rating Agency to determine the moral hazard of our risks. The moral hazard of any risk is determined greatly by the surroundings. For instance, a risk in a range of six frame buildings would average but one-sixth of the total. No matter how honorable a man the insured is, the moral hazard depends greatly upon his necessity for money. Experience has proven that more men use the fire route to safety than is consistent with good morals. Good and careful bookkeeping is essential to the insured and an annual inventory absolutely necessary.

Insurance Directors.

The following directors for the insurance company were then re-elected: Taylor Frier, Louisiana; F. Neudorff, St. Joseph; E. A. Demeter, Macon; F. A. Kansteiner, St. Louis; M. C. Post, Brookfield; W. T. Shoop, Richmond. O. W. Johnston, Marshall, was selected in place of J. W. Poland of Carrollton.

Association Officers.

The election of officers for the Hardware Association developed into an ovation for President Frier and Secretary Neudorff. Mr. Frier was chosen president for the coming year by unanimous vote, and the Executive Committee, which selects the secretary for the organization, was instructed to retain Mr. Neudorff in his position. The efficient work of Secretary Neudorff has been the mainstay of the association, and the members evidently appreciated the fact.

Wm. H. Hahn of St. Louis was elected vice-president in place of E. L. Wachter of St. Louis, who expressed a wish to relinquish the office.

The committees for the coming year are as follows:

EXECUTIVE COMMITTEE: F. A. Kansteiner, St. Louis; W. T. Shoop, Richmond; O. W. Johnson, Marshall.

TRADE ABUSE COMMITTEE: O. W. Johnston, Marshall; H. J. Brunner, Kansas City; J. A. Pauly, St. Louis.

AUDITING COMMITTEE: J. G. Weber, Clayton; A. Steinmeyer, St. Louis; G. L. Phillips, Bethany.

On motion by F. Kansteiner of St. Louis the word "Stove" was dropped from the association's title, and the organization in the future will be known as the Missouri Retail Hardware Dealers' Association.

J. W. Poland, Carrollton, the first president of the association, was elected an honorary member for life.

Hannibal was selected as the next meeting place, the time of meeting being left to the Executive Committee.

Secretary's Report.

Following was the annual report of Secretary Neudorff:

Since our last meeting in St. Louis we have entered upon a new era in our association work. In the effort to establish the association on a permanent basis the best thought of all past and present officers has been given. We have all learned the lesson long ago that patriotism that pays is the dependable kind, and while the officials who were in touch with the actual work knew something of the actual results benefiting the retail Hardwaremen one and all in a direct manner, yet the members at large knew of it only in a general way and that was not impressive enough to hold them steadfast and loyal to the organization. So after two years of investigation and discussion enough pledges were secured at our last meeting to warrant your officers in entering upon the work of establishing an insurance department. The actual work was slow and laborious, because the field was a new one to all of us, and especially so to the secretary. Blanks and forms had to be prepared, constitution and by-laws written, and all so prepared as to be in harmony with the laws of our State which control such matters.

It was a difficult task and a source of mental strain and worry. Then came the work of organization, and this was finally accomplished to the satisfaction of the Insurance Commission of the State and our company was ready to write policies. Permit me to say this in compliment to the loyalty of our members. We presented a new and the hardest problem in the insurance field that had ever been attempted, but for that very reason the safest and best plan ever devised in that realm, and they loyally stood by the organization and put it on its feet. Some other plan might have brought quicker and better results, and I trust that in our insurance meeting some quicker and easier plan may be devised and accepted that will give us the same assurance of safety. One fact is

certain: we are growing too slowly and the profits therefore will not be as satisfactory as with a more rapid growth. I mention these things in my report as secretary to give you some idea of the extent of the labor performed for you by this office.

During my last term I wrote in long hand over 600 letters. Since February 14, 1904, I have written over 1000. I present with this report copies of printed and mimeograph letters sent out, numbering in the thousands. I mailed over 1500 copies of our manual and 1200 reprints of our last meeting, furnished through the courtesy of *The Iron Age*. I have written and mailed all details of insurance policies, sent out hundreds of blank applications and explanatory letters, and have given your work as much time and attention at least as I have given my business. It is work which I do not regret, however, because the influences have made me a better business man and results of my business prove it. I trust at this meeting some arrangement can be made to send out a solicitor for the insurance and association work. It is the only method whereby we can build up the prestige we should have. We have grown nicely through the past

FREDERICK NEUDORFF.

year, but not at all in comparison with what we should have done. Our finances are in the best condition they have ever been.

LOCAL COMPETITION.

There is one final thought I wish to leave with you and ask your consideration, and that is the best plan to treat local competition. To my mind that is of greater importance to ourselves in every sense than any other question. Is there not too much envy, jealousy and lack of brotherhood in our intercourse with one another? Is not the field great enough and the harvest ripe enough for all to reap the fruits that come with self and neighborly respect? I confess that personally I might do much better and no doubt all of us lack something of perfection, and I wish this convention would show the way to a better understanding and more fraternal intercourse. I have felt a great pride in the membership of the Missouri Association. It is a rare thing and a happy remembrance to know that in three annual meetings such perfect harmony prevailed that not one solitary negative vote was cast after candid talks, investigations and explanations. It is a remarkable thing to record such unanimity, and we ought to be proud of this record.

Exhibits.

The following displays in the hall, corridors and rooms of the Metropole Hotel were noted:

AMERICAN STEEL & WIRE COMPANY, Chicago, H. H. Salisbury, G. L. Magill and J. Willard Scott; Woven Wire Fencing.
E. C. ATKINS & Co., Indianapolis, Ind., G. W. Gladding; Saws.
BRIDGE & BEACH MFG. COMPANY, St. Louis, Edward J. Fox and Henry Hoener; Stoves and Ranges.
COLE MFG. COMPANY, Chicago, C. W. Breisford and N. D. Stewart; Heating Stoves.
CHARTER OAK STOVE COMPANY, St. Louis, Mo., F. P. Haus; Stoves and Ranges.
DIAMOND SPIRAL COMPANY, Chicago and Tinley Park, Ill., William Scharf; Up To Date Washer.
MAJESTIC MFG. COMPANY, St. Louis, A. L. Retter; Ranges.
MALLEABLE STEEL RANGE MFG. COMPANY, South Bend, Ind., Fred Haller.
MAY & FIEBEGER, Akron, Ohio, R. A. Stebbins; Akron Air Blast Furnace.
NATIONAL CASH REGISTER COMPANY, Dayton, Ohio, K. F. McIntosh.
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa., C. L. Ellsworth, W. D. Ellsworth; Wire Fencing.
PARRISH-ERICKSON HARDWARE COMPANY, St. Joseph, Mo., M. D. Ayers.
ROCHESTER STAMPING COMPANY, Rochester, N. Y., J. G. Beegle.
ST. JOSEPH PUMP & MFG. COMPANY, St. Joseph, Mo., E. A. King; Perfection Water Elevator and Purifier.
SIMMONS HARDWARE COMPANY, St. Louis, Mo., John Hall.
WHITE LILY WASHER COMPANY, Davenport, Iowa, F. L. Schmidt.

RETAIL HARDWARE DEALERS' ASSOCIATION OF PHILADELPHIA.

THE annual meeting of the Retail Hardware Dealers' Association of Philadelphia, Pa., was held at its warehouse, 420 Commerce street, on Wednesday evening, February 8. The following officials were chosen for the ensuing year:

PRESIDENT, N. C. Engle, 1001 Ridge avenue.
VICE-PRESIDENT, G. R. Mitchell, 1826 Ridge avenue.
SECRETARY, F. A. Mitchell, Twentieth and Callowhill streets.
TREASURER, E. W. Richards, 2029 Frankford avenue.
DIRECTORS: C. W. Flood, T. C. Ulmer, A. L. Agolf, F. Berlin, John Orr, A. Kaiser, Geo. E. Driver, Paul J. Devitt.
PURCHASING COMMITTEE: F. A. Mitchell, chairman; N. C. Engle, Tools; E. W. Richards, Building Hardware; Geo. R. Mitchell, Electrical Supplies; Paul J. Devitt, Cutlery; John Orr and Geo. Driver, House Furnishings.
SUPERINTENDENT OF WAREHOUSE, H. M. Boyle.
BOOKKEEPER, Aubrey M. Hancock.

This association was organized October 29, 1902, and incorporated on April 30, 1903, with a capital of $5000. On April 13, 1904, the capital was increased to $15,000. On July 1, 1903, the first warehouse was established in a room 12 x 18 feet. This was donated by F. A. Mitchell to the association as an experiment for six months. At the expiration of three months the business had grown to such an extent that the members were compelled to seek larger quarters, and leased the first floor and basement of 112 North Sixth street for one year. By January 1, 1904, these quarters had been outgrown, and the association was compelled to secure its present warehouse at 420 Commerce street. The members of the association are now in position to secure through their organization at least 75 per cent. of their requirements in stock. All business conducted by the association is on a cash basis. This applies not only to the purchases made by the association, but to merchandise bought by members from the association.

Although capitalized for but $15,000, this is more than ample, as each member is compelled to pay for all goods bought from the association before or by the Wednesday following the purchase. This enables the association to turn its capital about 24 times a year.

All goods handled by the association are purchased direct from manufacturers, thereby saving to its members the jobbers' profit. This places the members of the association in a good position to meet competition. Before the association was organized the members who comprise it, it is stated, found it next to impossible to meet the competition of the department stores, which bought direct and in large quantities.

On Thursday evening, February 9, the second annual banquet of the association was held at Boothby's Hotel. Addresses were made by N. C. Engle, E. W. Richards, A. Kaiser and F. A. Mitchell, after which the president, secretary and treasurer were each presented with handsome silk umbrellas as a testimonial of the high esteem in which they were held by their fellow members. One of the features of the banquet was the souvenirs contributed by various manufacturers. To the Entertainment Committee in charge of the banquet, consisting of Charles M. Flood, Paul J. Devitt and Charles Berlin, much credit is due for the marked success of the occasion.

Indiana Retail Hardware Dealers' Association.

CONCLUDING REPORT.

IN our last issue we referred to the opening session of the Indiana Retail Hardware Dealers' Association, which convened Tuesday, February 21, in the Hotel Denison, Indianapolis, at 2 o'clock. The delegates were disappointed at the absence of A. F. Sheldon of Chicago, who was to have addressed the convention on the subject "Business Management and Scientific Salesmanship." Mr. Sheldon found it impossible to be present, so that with this exception the afternoon's programme as outlined in our last issue was carried out.

Combination Heating.

The address of Chas. Smith, president of the Chas. Smith Company, Chicago, was extremely interesting, the subject, "Combination Heating," being one on which many delegates desire as much information as possible, and his remarks were closely followed. He spoke as follows:

You men in the Hardware business all know that you are up against a number of snags, and the snags are rubbing you pretty hard. In almost every article you handle you are in competition with the catalogue houses. The heating business is the only thing they don't touch you on, and it is about the only thing that is left to you on which you can get a fair profit.

Combination heating is something that 15 years ago was not talked about or known in the United States. All the difference between indirect steam and indirect water and a combination of hot air and hot water is this: That with the steam and hot water you carry the heat over to the air, and in the other you bring the air over to the furnace. That is all the difference there is in it, and there is not a steam fitter in America but knows and admits that the best way to install a steam or hot water plant is by indirect radiation. I want to make this assertion provided you have a properly constructed furnace.

There is no other way of heating a residence as satisfactorily as with a furnace, provided the furnace is properly constructed, of sufficient size and properly installed. But a furnace has its limitations. Where the distance is too great for a furnace to reach, then the combination of hot water in connection with the hot air overcomes the difficulties caused by the limitations of the furnace.

I have not touched upon the matter of economy. A saving of 30 per cent. in fuel is made by a combination. Not only this, but a combination is more durable than straight steam or water, and it virtually gives the owner two systems, for whenever the hot water part of the system becomes defective the warm air part can still be used.

Mr. Smith then mentioned an instance down in a little town in Indiana where a gentleman had built a fine residence and desired to put in a combination plant, but after discovering it would cost him $600 felt some reluctance about incurring the expense, as he had already expended a large amount of money in other ways. Mr. Smith showed him that with an expense of $350 he could heat the principal rooms with hot water and the balance with hot air, which he said proved very satisfactory to the owner and produced almost as much profit to the contractor as if he had put in the plant originally planned to cost $600.

Insurance Resolution.

Mr. Tyler of the Merchants' National Mutual Fire Insurance Company then addressed the convention and presented the following resolution, which was unanimously adopted:

Whereas, The retail Hardware dealers of Indiana have found a large saving in the cost of their fire insurance when carried with mutual companies; and

Whereas, There are good mutual fire companies in other States devoted to the special interests of retail Hardware dealers, patronized at the disadvantage of correspondence, without representatives in the State and not under the supervision of the Indiana Insurance Department; be it, therefore,

Resolved, That the Indiana Retail Hardware Dealers' Association requests the Senators of the Legislature to vote for House Bill No. 2, without amendment, for the admission of mutual fire companies of other States having the same assets required of the mutual companies of Indiana.

Growth of the Association Idea.

Secretary Corey addressed the convention and spoke of the rapid increase in the membership of the various State associations. He referred to the fact that at the meeting of the National Retail Hardware Dealers' Association held in Chicago five years since there were represented only five States with a membership of 700, whereas at this time there are 18 States represented with a total membership of over 5000, and in addition to the large increase numerically the utmost harmony prevails throughout the entire country.

Mr. Shidler's Paper.

A. N. Shidler of South Bend then read a paper entitled "On Which Item Does the Success of a Retail Business Hinge—Is It Quantity Buying. Discounting Bills, Advertising, or What?" This paper was printed in full in the last issue of *The Iron Age*.

Convention Committees.

The following committees were appointed by President Bush:

RESOLUTIONS: M. L. Lewis, Marion; Mr. Townley, Terre Haute; Mr. Weaver, Ligonier; Mr. Creed, New Albany; Mr. Heidt, Oakland City.

PRESS: Mr. Jamieson, Lafayette; A. M. Smith, New Ross; Mr. Cope, Kokomo.

AUDITING: O. E. Lang, Mishawaka; S. L. Ocher, Roann; W. L. Hubbard, Scottsburg.

NOMINATING: C. A. Ellis, Carlisle; Chas. New, Bourbon; Albert De Prez, Shelbyville.

BY-LAWS: Mr. Gardner, Monticello; Mr. Scott, Muncie; Mr. Price, North Liberty.

GRIEVANCE: Chas. Frame, North Manchester; Mr. Shanklin, Frankfort; Mr. Slater, Argos.

S. Norvell's Address.

S. Norvell, president of the Norvell-Shapleigh Hardware Company, St. Louis, and chairman of the Catalogue House Joint Committee, addressed the meeting at some length, using as a text, "The Brands of Experience." His remarks were interwoven with personal experiences which were interesting and instructive. He gave *The Iron Age* credit for first calling the attention of the trade to the catalogue house evil, by prominently using his letter bearing on this subject in April of last year.

Mr. Fernley's Address.

T. James Fernley, secretary of the National Hardware Association, was introduced, and spoke as follows:

I am particularly pleased to see such a large increase in membership since it was my pleasure to visit you two or three years ago. I believe you have more than doubled your membership since then, and I sincerely hope that within the next 12 months, or 24 at the outside, this association shall again be doubled in membership and in influence. I have not had the pleasure of visiting as many retail association meetings as the chairman of our Joint Committee has who has just addressed us, but I doubt whether he has seen a more intelligent body of retail Hardware dealers in any other part of the country than I see before me to-day.

I am pleased to bring to you the fraternal greetings of the National Jobbers' Association of the United States, composed of 190 jobbers in all parts of the country—from coast to coast and from Canada to the Gulf of Mexico—an organization which is growing in influence largely because of the formation and maintenance of the Retail Hardware associations of the United States.

I want to thank you gentlemen of the retail interests of the country—Indiana and elsewhere—for having aided our association in the building up of this membership. I really believe that the presence of the gentleman who

has just spoken to you here and his membership in the National Hardware Association are due more to the influence of the retail merchants of the country than probably any other one cause.

I come to you and say to you that your interests and our interests are interwoven; that one cannot suffer without the other being affected.

Mr. Fernley then referred to the proceedings of the Catalogue House Committee of the National Jobbers' Association at Atlantic City, and said that they had had the inside workings of this joint committee, as reported at Atlantic City, reprinted and issued in pamphlet form and a copy would be furnished to the delegates present.

Report of M. L. Corey.

M. L. Corey, secretary-treasurer, presented the following annual report:

In many respects the past year has been the most satisfactory one in our association history. We have added more new members; we have had less complaints; our members have manifested greater interest and have given more assistance. Relations with manufacturers

M. L. COREY.

and jobbers are friendly, and there is a growing disposition to recognize and inquire into conditions that affect the retail trade. We have good reason to feel encouraged and can face the future full of hope and expectation.

Other States report substantial progress and a record breaking attendance at conventions. There is general harmony and individual desire to render loyal cooperation whenever called upon.

We meet again, five years old. Nearly all of the firms that voted at Evansville in 1900 to adopt our present name are with us yet. A few dropped out but have since rejoined. A reliable list of retail Hardware dealers of our State is hard to maintain and this information can best be furnished by our own members, and if some one would report from each county the changes or items that affect the Hardware line the information would assist the secretary in doing better and more effective work.

We take pleasure in acknowledging the assistance given by many of the Indiana traveling men. Almost universally they have advocated our cause as being worthy of support and indorsement. One year ago we voted to receive these camp followers as honorary members, and while this was a new feature and no special effort was made to secure a large list, 15 traveling men paid their dollar and have membership cards. Other States have adopted this feature and find it works well, and we recommend it to be continued and that the secretary be authorized to subscribe for the *Bulletin* for each honorary member. This will put our traveling men in position to talk association doctrine and results intelligently, as well as remove some of the friction sometimes resulting from indiscriminate selling. Up to the time of delivering this report 117 traveling men have paid their annual assessment at this session.

Some members have complained that not enough time has been given at conventions to discussions of trade matters. We have intended this year to give all a chance Your officers are firm believers in the benefit of swapping experiences. This is your meeting, and the secretary has been authorized to take all the time that is needed in threshing out matters that may be brought before this convention. Many are here for the first time to-day, and we hope that all will feel perfectly free to express their opinions and bring up any question that you may desire discussed. In order to facilitate business the question box will be used, and you are all invited to patronize it liberally.

Secretary Corey then referred to a few specific complaints that had been received during the year.

In his report as treasurer Mr. Corey reported a balance in the treasury of $338.08, not counting the receipts during the present meeting.

T. J. Lindley of Jeffersonville then made his report as a delegate to the national convention. Sharon E. Jones of Richmond then read the following paper:

Does It Pay to Go Out After Business?

Does it pay to go after business? I answer yes. Most emphatically yes. Why? Because it has been tried and tried again and proven to be even so. By whom? By the individual merchant, the manufacturer, the doctor, the lawyer, the butcher, the baker, the undertaker, the insurance man, and even the green goods man; in fact, by almost every one who has made a success of his business.

There is no line of business to-day that requires more study, closer application, better methods or more competent salesmen than does the Hardware business, and yet every man in the business does not meet these requirements. The Hardwareman has a great variety of customers, as varied as the human race. And whether they come to his store or he takes his store to them, he must deal with each according to his peculiarities.

Going after business does not always imply searching for customers or business out on the road, but it may mean going after the customer when he calls at your store for something. I have seen men who posed as merchants or salesmen who could not sell to a customer who came into the store purposely to buy and the matter of quality or price did not enter into the case; but simply through failure to talk in the right manner at the right time they could not make the sale. So it pays first to go after the business in your own store when the customer calls. Many a customer has been driven away from the store by an incompetent clerk or a grouchy dyspeptic merchant or salesman. And, fellow merchants, don't be too sure you are not guilty of such a thing. Complaints have been registered against several merchants of my acquaintance that I am sure do it thoughtlessly.

TELEPHONE AND TELEGRAPH.

There are many merchants here no doubt who go out after business and perhaps no two go after it in the same way. There are as many ways of going after business right as there are ways of reaching your customer—viz., using the telephone, the telegraph, the mail, sending a representative or going yourself. There are other good ways used, likely, but the above, I think, are the most used and most successful. But which of the above methods do we find most successful? We use all of these more or less in our business, and when used judiciously, find them all good. There are times when we have something special to offer our customers and it is impossible to see them personally or by representative quickly, as the case requires. We have used the telephone and telegraph and taken orders that would have been missed otherwise. The modern telephone is next to the personal call. You can talk into your customer's ear; he recognizes your voice and you his; you have the opportunity of approaching him. If you have his confidence your word over the 'phone is sufficient. If he be in the market and you tell him now is the time to buy and your price is right, you will likely get the order then and there.

Now that a large number of our customers have tele-

phones in their houses and places of business it is coming to be a common method of reaching them. It costs on an average 25 cents to talk to a customer out of one's own home town, but the customer whom you call knows this and it impresses him as being important and urgent or you would not go to this expense. Of course this applies to the customer who is in need, or soon will be, of the particular goods you offer for sale at the time. I would not regard the telephone as a good medium for advertising or the finding of prospective buyers, especially among farmers. Now, don't understand me to say that all prospective buyers will buy over the 'phone, even if your price and word be good, but most of them will. The telegraph can be used but to a limited extent and only when telephones can't be had or the distance makes the expense too high, and yet only 48 hours since a certain manufacturer called me by 'phone at an expense of $1.50 and offered some goods he thought we would buy, and we did. A short time since another manufacturer spent $3.50 to talk five minutes and landed an order. Probably neither of these orders would have been taken but for the 'phone. We must not count the expense always if the probabilities are good that an order will come, for expense attaches urgency and importance to the message and frequently has much to do with securing the order.

THE MAILS

are used perhaps more than any other method of selling goods, and this is done in different ways—viz., personal letters, general letters, advertising matter—and where this is well and judiciously done it has met with success. The catalogue houses use no other method, and show me the man who says they have not been successful to the extent they have been permitted to go. If this were not true the most vexing problem perhaps that confronts all retail dealers would vanish soon. I am not indorsing catalogue houses, but I do say that we would do well many times to be as persistent and explicit in going after business as they are. It is needless for me to say that it is not because they have the goods and the price that secures them the orders, but the making known of that fact to people. You may have the same goods and same prices or better goods and lower prices, but you fail to inform the people that you want to sell them to. The consequence is that the catalogue house gets the business by going after it, and I am afraid many of us are losing much business by going after the catalogue houses instead of going after the business.

LETTERS.

A merchant may reach every consumer through the mail, and some are so situated that this is the only feasible way of reaching them, but this is going out after business in every sense of the word. It is done as before stated, by letter, either personal or general, calling attention to some particular line of goods or some special article and naming prices when thought best. But such letters, of course, should fit the particular case. For instance, a letter with reference to Farm Implements should be sent to the farmer; with reference to Housekeeping Utensils to the farmer's wife. A letter about Paints and Painters' Supplies should be sent to a painter, not to a well driller. Suit the advertising to the people you send it to, just as you buy the goods to suit the people who use them.

We find that personal letters do much good, and while not always order getters, they frequently are. The mail carries advertising matter and newspapers to any one who has an address in this part of the United States, and while such methods are seemingly overdone and money wasted thereon, it is the cheapest and, when judiciously done, a good method of going after business; and regardless of how many methods you may have of going after business, this should be one of them.

NEWSPAPER ADVERTISING.

There is absolutely no room for argument as to whether advertising pays. One need only look at the daily papers, magazines, circulars, &c., that are scattered broadcast, or inquire of the many advertisers as to whether it pays to go after business through the medium of advertising. Some of the largest and most prosperous concerns in the country never went out after business in any other way than by advertising. But notice how they do it. Catchy, to the point, often changed, in season, perpetual. I have heard of advertisers kicking because they thought it was throwing money away; and in many instances it is, for there is not enough common sense used in the wording of advertisements, and goods should be advertised in season and the advertisement changed frequently. I have heard of advertisers who were retail Hardware dealers contracting for a given space in a daily newspaper, allowing the same ad. for ice cream freezers to run from June to December, or mowing machines from June to Christmas. And the truth is they did not sell as many as the merchant who had a six-day ad. in the same paper.

I know I am speaking to more merchants who live in small towns than large towns, but many small towns have a newspaper, either daily or weekly, and recently I heard the owner of one of these papers say that he could not get merchants in his little town to advertise. They did not think it paid because of the smallness of the town. But the publisher got his advertisers from Richmond,

SHARON E. JONES.

Muncie, Indianapolis, and the consequence is these merchants were selling and shipping goods right into the little town at no better price than the merchant there could have sold them, but the people of his own town did not know the goods could be bought there.

PERSONAL CALLS.

Now, lastly, going out after business, either personally or by a representative: This after all is the method that gets the business. Where the business will permit it the proprietor may do this more successfully than any one he could employ, and it should be done by the proprietor where conditions will permit, for the average customer would rather buy of the proprietor than of an employee. But in the larger towns this cannot always be done, for the buying and general management of the business depend on the proprietor, so that the salesman is employed to go out after business, and it has been the experience of some that the salesman can secure better prices than the proprietor. He may be "worked" as hard as the proprietor for a better price or rebate, but not having that authority he manages to land the order at his selling price, while the customer is often able to "work" the proprietor.

SEND A COMPETENT SALESMAN.

My experience and my observation have been that where a competent salesman has been sent out after business, whether it be to the farmer, manufacturer, contractor or any kind of consumer, he has met with success. Of course we can't always get a competent salesman and must take the best we can get. Yet a poor salesman will sometimes make a success, and a poor one is better than none. Still, the best is none too good, and all things considered, there is no economy in employing

a salesman because he can be had at low wages. The good salesman can command good wages because he can make more money for his employer, and the time to send him out is early and often.

PROSPECTS.

NAME Ongor Co
ADDRESS Tribury Ind.
RATING 3 to 5.000
DATE OF PROSPECT Mch. 5 DATE WANTED
DATE OF SALE DELIVERED
SETTLEMENT SALESMAN Caton

ARTICLES.

Hardware for house and barn

THE TIME TO CANVASS

the trade for spring goods is in the fall; the time for summer goods in the spring; the time for winter goods in the summer. Why so far in advance? Because the average customer, especially among farmers, knows what he will need that far in advance, and if you are first to talk with him about it you find out when he will need it and if unable to sell it at the time you have him down as a prospective buyer for that article, and the next time you call you talk to him again about it or land his order for future delivery. This heads off the catalogue house, because the man will not buy from them in advance, for his money must go with the order. You have the advantage over your competitor because you are first on the ground. The chances are much in favor of the man who gets there first.

This method of going after orders is not confined to the farmers' trade. It can be used in almost every line. The fact is this method is used by those from whom most of us buy our goods. We know that unless certain traveling salesmen called on us regularly some one else would likely get some of the orders, so that there are but a very few jobbers or manufacturers who do not call on the merchant regularly for business. We know by observation as well as by their own statements that it is the best method by which they can get their goods into the dealers' hands. And if this be true of the jobber and manufacturer, why should it not prove true of the retailer? Many jobbers and manufacturers these days have a department whose duty it is to look up prospective buyers and go after them, using all the foregoing methods, and the name is not lost sight of until the order is secured or lost to a competitor. I sometimes get vexed at the persistence of some of these order seekers, but after all I consider it a very good method and I am sure it pays or they would not keep at it. I know it pays our company, although we do not secure every prospective order.

RECORD OF SALES AND PROSPECTS.

It might be of interest to some of you to know how the record of sales and prospects can be easily kept. We have a salesman's blank to be filled out by him each week, giving a report of sales for the week and also the names of customers who are prospective buyers for other articles, naming each article and date wanted. This is transferred to another form and filed alphabetically as to name, and also under date the customer should be called on again. This is followed up until the order is landed or lost. [These forms are illustrated herewith.]

Salesman's Report

For week ending April 23 *190*4

SALES.

NAME AND ADDRESS OF PURCHASER.	No.	ARTICLES.	PRICE EACH.	TOTALS.
J.D. Ramsey, River View Ind	2	Low Cut Lawn mowers. 12 in	4 50	9 00
	5	" " " " 14 in	4 75	23 75
Samson, Son & Co. Plainton Ind		350 pounds Paris Green	12½	43 75

Prospective Purchasers Seen This Week.

NAME AND ADDRESS.	ARTICLES WANTED.	DATE WANTED.
Bush, Summ & Co. Lockside Ind	2 tons Sisal Binder Twine	May 15

Salesman J. Henry Brown.

A Mark of Appreciation.

A resolution was presented and unanimously carried presenting to M. L. Corey, secretary-treasurer of the association, $150 as a slight appreciation of the work done by him in behalf of the association.

Mr. Muzzy's Address.

F. E. Muzzy of J. Stevens Arms & Tool Company, Chicopee Falls, Mass, by special invitation, addressed the meeting on "The Marketing of Well-Known Trade-Mark Goods with Protection and Profit to Retailers." Mr. Muzzy explained the position of his company and the manner in which they protected the retail dealers. He also touched on various subjects of interest to the members, such as mutual insurance, Parcels Post bill, and laid special force on the retail dealers cultivating the friendship and acquaintance of their trade, and said that the profits of their business depended largely on salesmanship and not on selling goods at cut prices.

Question Box.

The Question Box was then opened and the questions contained therein were discussed under the direction of Secretary Corey. Among the questions were the following:

How many have written to their Congressmen about Parcels Post?

A number of delegates raised their hands, indicating they had followed this course.

Can the local papers be stopped from taking advertisements from catalogue houses?

One delegate said that the paper in his town did not take advertisements of this kind because if it did it would lose the support of the home merchants.

Another said the difficulty was that most of the small country papers were partially printed with "patent insides" in the large cities, and it was difficult to have these portions changed.

Other delegates expressed the opinion that these papers could overcome that difficulty by insisting on having their printing done by such news agencies as were willing to keep out the advertisements of catalogue houses.

How can we best deal with unfriendly competitors?

One delegate said bring them to this convention, while another stated that all the Hardware dealers of his town were in attendance at the convention with the exception of one, who was expected to arrive in the morning.

Secretary Corey said there were dealers stopping at the hotel from the same towns who were actually sleeping in the same beds.

Does it pay to put a canvasser out the year round? How much does it cost for such a salesman for the whole year?

Some delegates said it would cost $1000 to $1500 a year.

Is it good policy to quote prices or have arguments about matters in dispute over telephone lines?

A. N. Shidler, South Bend, said: You could not avoid quoting prices over the telephone; that if you tried to avoid it you would lose business. He said he bought most of his goods over the telephone.

As to the benefit derived by retail dealers from farmers having individual telephones, one delegate expressed the opinion that the farmers were inclined to want the dealer to deliver very small purchases many miles in the country.

Would it be a good idea for this convention to pass a resolution requesting manufacturers to establish retail selling prices on their wares and compelling the dealers to hold to these prices?

There were many cries of "No" from the delegates.

Is it good business for a Hardware jobber or manufacturer to sell blacksmiths in a town or a village where Hardware dealers carry such goods?

There were general expressions of "No" to this question.

In answer to the question of Secretary Corey as to whether the delegates had had troubles along that line there was a general expression in the affirmative.

Can there be a law making the shipper responsible for breakage on Stoves where the shipper agrees to lay them down? What is your experience in collecting damages from railroads?

There was considerable discussion on this subject. The consensus of opinion was that railroads generally pay claims when properly presented for breakage of goods in transit.

Can a strictly cash Hardware business succeed under the present conditions of trade?

In response to an inquiry of Secretary Corey the delegates generally said that they were doing a credit business. No delegate stated he was doing a strictly cash business.

A letter was read by Secretary Corey from the H. D. Smith Company, Plantsville, Conn., in which that company referred to the souvenir Screw Drivers sent by it for distribution among the delegates. Special attention was called to the merits of the Screw Drivers. The reason for this method of distribution was the apparent apathy of the jobbers to take up and push the sale of this Screw Driver to the retail trade.

Resolutions.

The Committee on Resolutions presented their report in part as follows, the resolutions being unanimously adopted:

Whereas, We believe in the existence of the illegal practice of the giving of rebates by the railroad corporations to certain large shippers; and

Whereas, Such discrimination places unjust burden on the small shipper; and

Whereas, We believe in extending the power of the Interstate Commerce Commission to enable them to remedy this injustice; therefore, be it

Resolved, That we commend the action of President Roosevelt in his endeavor to right this injustice; and be it further

Resolved, That copies of this resolution be mailed to the President and our Senators from Indiana.

Resolved, That we strongly urge upon our members the importance of carefully watching legislation on the Parcels Post question. This is a measure which if ever adopted by the Government will seriously cripple the interests of the retail merchants of the country. We therefore ask that the members of our association use their influence on members of Congress to the end that they shall pledge themselves to vote against any such measure.

We further urge the adoption of 1 cent letter postage. This is a measure which will benefit every citizen of our land and is one which is in favor of the masses and not of the classes.

We desire to make special mention of the great aid rendered our association, as well as all the retail trade of this country, by the National Hardware Association, who for years have been pursuing a policy which has been in the interest of our branch of the trade; therefore, be it

Resolved, That we express a hope that the time is not far distant when the few houses not now members of the National Hardware Association will become members of that most excellent association, and thus through the united action of manufacturers jobbers and retailers our chosen business will be more pleasant and profitable.

Results of Friendly and Unfriendly Relations Between Local Dealers.

H. W. Beegle, Chicago, representative of Robeson Cutlery Company and Rochester Stamping Company, addressed the meeting, as follows:

In my travels from Boston to the Golden Gate, from St. Paul to the Gulf, I have seen many incidents of petty jealousy and ugly competition that make one think what fools we mortals be. Also have I seen many incidents showing, if not fraternal feeling, at least one of wisdom in neighborly co-operation.

The traveling man is not merely a disinterested observer of these things, for what makes for the good or ill of the trade affects him. We read that "Whom the gods would destroy they first make mad." We know also that harmony and co-operation cannot be reaped where suspicion and jealousy are sown. There is a town in northern Indiana having a rich surrounding country, many evidences of wealth such as good public buildings, many comfortable homes and improved streets, but each time I have visited it the business section has seemed to shrink. When I inquired of our customer if he belonged to the Hardware association he said he had no use for it, saying "I can run my own business." That

same spirit seemed to pervade the entire town. Our business dropped off to such an extent because of lack of consumption that we have marked the town off our list. The last trip I made there the station agent said that more goods were shipped into that station by catalogue houses direct to consumers than were shipped to dealers.

Not so at the adjacent town, where I know there is a feeling of brotherhood, where the Hardwareman is addressed by his given name, where there is a feeling of cooperation. In that place the consumption of our goods has increased. Our dealer assured me at my last trip that the catalogue houses were not bothering him to a noticeable extent. The railroad table states that these towns are 8 miles apart. Yes, but some one says, there is a difference in the towns. I state, knowing them both, that the natural difference is in favor of the first town.

COMMUNITY OF INTERESTS.

Any town is only a community of interests larger than the family, the same as the family is a community of interests of its various individuals and the body of its several members.

Perhaps no better illustration can be found of utilizing a friendly competitor than was given me at my recent trip to St. Louis. One merchant was speaking of a competitor in very pleasant terms and proceeded to say "When I have a delivery to make in his section and the roads are rough I 'phone the order over and he delivers the goods for me. It is needless to say that my friend reciprocates."

EFFECTS OF RECIPROCITY.

Two years since I was talking with a merchant of southern Indiana and learned that all the dealers of that town of 9000 inhabitants were on a friendly basis. They all unite for public improvements. They brought about the bettering of the wagon roads leading into the town to draw trade. The local newspapers worked for the town. The Hardwareman helped the clothier and the clothier helped the dentist, so that the dentist was able to build a house, which of course in turn helped the Hardwareman. It is wonderful what reciprocity can do when the bear and forbear principles are used.

A Battle Creek merchant said to me some years ago: "One thing that commends the Hardware Association to me is that it causes acquaintance and begets confidence. We never felt like getting acquainted during business hours. If I should have to go into another's store I got out quickly for fear he would think I was spying. There was a general feeling that the other fellow was a horse thief and a liar. Since we have had our association I find that the other fellow is just as nice a man as I am."

How wholesome it is for a dealer to have proper respect for his brother merchant and an interest in his welfare. When you condemn the steak of your butcher and cast insinuations at his sausages, with the suggestion that every one had best lay in a supply when they are down at Indianapolis, you lessen his opportunities for providing tenderloins for the home market, you lessen the possibilties of his building for himself a new home, and you kill the opportunity for making profit on his Fittings, Furnace, &c.

Viewing the proposition from another standpoint than that of business we see that the social and moral side of a community suffer when the dealers are in a constant war. It is bad enough when one is indifferent to the troubles of his fellow man. It is deplorable when one rejoices at the calamity of another.

H. H. Roberts, Chicago, representing *The Iron Age*, and Daniel Stern of the *American Artisan* then addressed the meeting.

The Auditing Committee reported they had examined the treasurer's books and found them correct.

New Officers.

The following officers for the ensuing year were chosen:

President, A. N. Shidler, South Bend.
FIRST VICE-PRESIDENT, Chas. Frame, North Manchester.
SECOND VICE-PRESIDENT, Walter B. Creed, New Albany.
SECRETARY-TREASURER, M. L. Corey, Argos.
DELEGATES TO NATIONAL CONVENTION: E. M. Bush, Evansville; A. N Shidler, South Bend; Albert Deprez, Shelbyville; W. S. Hubbard, Scottsburg; S. L. Fenner, Terre Haute; Otto Lang, Mishawaka.

Place of Next Meeting.

Indianapolis was chosen for holding the convention in 1906.

The Banquet.

The banquet tendered the delegates by the manufacturers and jobbers of Indianapolis was a most enjoyable one. I. S. Gordon, president of the Indianapolis Saddlery Company, acted as toastmaster. N. A. Gladding, secretary of E. C. Atkins & Co., Indianapolis, welcomed the visitors in a graceful and felicitous address. T. James Fernley, secretary of the National Hardware Association, and the retiring president of the association, E. M. Bush, both made interesting addresses. Hon. Chas. W. Miller was the last speaker, "The Day" being his theme. His address was attentively followed and greatly appreciated.

Souvenirs.

READING HARDWARE COMPANY, Reading, Pa., Silver Paper Weight and sheet music.

E. C. ATKINS & CO., Indianapolis, Ind., Aluminum Pocket Comb.

HAMMAR BROS. WHITE LEAD COMPANY, St. Louis, Mo., A. J. Jordan Pocket Knife and nickel plated miniature Hammers.

J. L. MORRIS STOVE REPAIR COMPANY, Chicago, Ill. Celluloid Button.

CULTER & PROCTOR STOVE COMPANY, Peoria, Ill. Pocketbook.

ROCHESTER STAMPING COMPANY, Rochester, N. Y. Several articles of ware, which were raffled off free.

AMERICAN WRINGER COMPANY, New York. Miniature Wringer.

WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn. Stick Pin.

SIMONDS MFG. COMPANY, Fitchburg, Mass. Gold plated miniature Hand Saw.

PITTSBURGH STEEL COMPANY, Pittsburgh, Pa. Fob Chain with Charm.

L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis. Coin Purse.

STOWELL MFG. & FOUNDRY COMPANY, South Milwaukee, Wis., Pen Wipers and Stick Pin.

COLE MFG. COMPANY, Chicago, Ill. Mirror.

HOME PRIDE RANGE COMPANY, Marion, Ind. Nickel Plated Stove Lifter.

SHELBY SPRING HINGE COMPANY, Shelby, Ohio. Sash Lock, nickel plated and mounted, for use as a paper weight.

PETERS CARTRIDGE COMPANY, Cincinnati, Ohio. Stick Pin.

ESTATE P. D. BECKWITH, Dowagiac, Mich., Decorated Plate.

HEATH & MILLIGAN MFG. COMPANY, Chicago. Clothes Brush.

Visitors.

Among the representatives of manufacturers and jobbers present were the following:

NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, S. Norvell.
WHITE LILY WASHER COMPANY, Davenport, Iowa, Sam S. White, A. F. Victor.
LANDERS, FRARY & CLARK, New Britain, Conn., L. L. Redick.
COLE MFG. COMPANY, Chicago, C. A. Woolley, H. P. Baker.
L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis., G. C. Mueller, A. W. Jones.
SHELBY SPRING HINGE COMPANY, Shelby, Ohio, R. E. Murray.
T. C. PROUTY COMPANY, LIMITED, Albion, Mich., R. E. Murray.
RATHBONE, SARD & CO., Aurora, Ill., W. J. Snyder, E. H. Fay.
CULTER & PROCTOR STOVE COMPANY, Peoria, Ill., H. G. Culter, M. N. Hagaman.
CHAS. SMITH COMPANY, Chicago, Chas. Smith.
MAY & FIEBEGER, Akron, Ohio, Frank B. Scott.
DIAMOND SPIRAL COMPANY, Chicago, J. M. Rauhoff.
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa., E. Steytler, C. D. James, E. S. Jordan.
HOME PRIDE RANGE COMPANY, Marion, Ind., R. C. Houston, C. D. King.
SIMONDS MFG. COMPANY, Chicago, Will J. Feddery, R. H. Newman, A. F. Simonds.
QUALITY STOVE & RANGE COMPANY, Belleville, Ill., Geo. M. Jackson.
VOSS BROS. MFG. COMPANY, Davenport, Iowa, W. H. Voss.
LYONS SPECIALTY COMPANY, Lyons, Iowa, Wm. Petersen.
TROUT HARDWARE COMPANY, Chicago, Geo. W. Trout.
J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., F. E. Muzzy.
STAR SHOVEL & RANGE COMPANY, Vincennes, Ind., H. Brown, J. S. Cadot.
ROBESON CUTLERY COMPANY, Rochester, N. Y., H. W. Beegle, F. C. Hippard.
ROCHESTER STAMPING COMPANY, Rochester, N. Y., H. W. Beegle, F. C. Hippard.
LOVELL MFG. COMPANY, Erie, Pa., C. B. Wingfield.
THE AMERICAN WRINGER COMPANY, Chicago, G. H. Jantz.
ESTATE P. D. BECKWITH, Dowagiac, Mich., W. T. Leckie, D. G. Hughes.
STOWELL MFG. COMPANY, Jersey City, N. J., M. B. Hood, E. E. Davis.
LAFAYETTE STOVE FOUNDRY COMPANY, Lafayette, Ind., Wm. Vawter, E. S. Shelby, F. S. Moore.

STOWELL MFG. & FOUNDRY COMPANY, South Milwaukee, Wis., J. H. Dosser.
MAJESTIC MFG. COMPANY, St. Louis, A. B. Cleveland.
NATIONAL MFG. COMPANY, Sterling, Ill., W. P. Benson, A. B. Crane, D. R. Strain.
GEM CITY STOVE COMPANY, Dayton, Ohio, W. A. Rowland.
PETERS CARTRIDGE COMPANY, Cincinnati, Ohio, H. A. Kirby.
CRIBBEN & SEXTON COMPANY, Chicago, D. J. Dailey.
A. BURDSALL COMPANY, Indianapolis, A. F. Hezsch, Harry Reed, T. H. Carter, G. G. Allen, A. O. Stevens.
HIBBARD, SPENCER, BARTLETT & CO., Chicago, A. P. Reiter, F. H. Warren, F. S. Greenleaf, Frank Close, G. H. Weihmeyer, T. P. Van Horne, J. N. Wolf.
A. J. LINDEMANN & HOVERSON COMPANY, Milwaukee, Wis., N. Christophensen.
J. E. PORTER & CO., Ottawa, Ill., C. B. Howland.
S. S. RHODES & SON, Indianapolis, C. A. Helm.
LAYMAN-CAREY COMPANY, Indianapolis, Thos. Layman, Homer Davis, C. P. Aten, J. M. Lewis, Chas. Pearson.
GATES-OSBORNE CARRIAGE COMPANY, Indianapolis, W. A. Tuttle, S. S. Helms.
AMERICAN STEEL & WIRE COMPANY, Chicago, Ira L. Sawn, Jas. A. Boyd, Herbert P. Taylor.
DOVER MFG. COMPANY, Canal Dover, Ohio, A. F. Butler, O. A. Keyser.
DODD & STRUTHERS, Des Moines, Iowa, A. P. McGregor.
JOLIET STOVE WORKS, Joliet, Ill., A. Kammerdiener.
FOREST CITY PAINT & VARNISH COMPANY, Cleveland, Ohio, C. A. Young, E. W. Thompson.
LAWRENCE BROS., Sterling, Ill., E. F. Lawrence, E. E. Brennenan.
HEATH & MILLIGAN MFG. COMPANY, Chicago, W. F. Calvert.
LISK MFG. COMPANY, Canandaigua, N. Y., W. S. Toomey.
E. C. ATKINS & CO., Indianapolis, N. A. Gladding, Frank Wells, Robt. Eveland, A. J. Carson, E. W. Clark, C. J. Hendryx, Eduard Springer, Roy Bronson, Herman White, Frank Raible, Nicholas Hoffman.
VAN CAMP HARDWARE & IRON COMPANY, Indianapolis, S. G. Van Camp, Jas. T. Anderson, Riley Hunt, Milt Lewis, Jno. Stephens, Frank Jenners, E. McCammon, Geo. Cantwell, Geo. Adlan, Chas. Machet, R. O. Long.
LOWE BROS. COMPANY, Dayton, Ohio, R. G. Allen, C. S. Kennedy.
EDWARD K. TRYON & CO., Philadelphia, Pa., Jno. P. Walter.
SCHREIBER & CONCHAR MFG. COMPANY, Dubuque, Iowa, J. W. Conchar.
FIEBEGER HEATING COMPANY, Akron, Ohio, C. C. Hammond, H. J. Hough.
T. JAMES FERNLEY, Philadelphia.
JOHN LUCAS & CO., Philadelphia, Pa., F. F. Burg.
C. F. SMITH & CO., De Kalb, Ill., C. F. Smith.
READING HARDWARE COMPANY, Reading, Pa., Jno. E. Harbster, W. R. Johnston.
L. KOHN BROS., Hamilton, Ohio, Saml. Kohn, Chas. E. Draper, Frank Meharry.
LAMB WIRE FENCE COMPANY, Adrian, Mich., F. C. Stevenson, J. Gugdel, F. C. Wilcox.
ABRAM COX STOVE COMPANY, Philadelphia, R. H. Norman.
SILVER LEAF STOVE POLISH COMPANY, Indianapolis, J. R. Clark.
HAMMAR BROS. WHITE LEAD COMPANY, St. Louis, Mo., E. Thompson.
INDIANAPOLIS PAINT & COLOR COMPANY, Indianapolis, Jno. T. Godfrey.
GEO. BARCUS & CO., Wabash, Ind., A. D. Hughes.
SAFETY FURNACE PIPE COMPANY, Detroit, Mich., Chas. H. Alexander.
THE CHAPPPELL FURNACE COMPANY, Morenci, Mich., J. M. Triggs.

THE NEWHALL SHIP CHANDLERY COMPANY, for many years established at 78 South street, New York, where the property was badly damaged by fire January 26 last, announces the occupation of the five-story building at 186 Front street, near Burling slip. An office and warerooms have already been established at the new address, and the machine shop just put in operation will, we are advised, be increased in efficiency and producing capacity as fast as possible. The company is now in a position to execute orders in its line with reasonable promptness.

A LOCAL PAPER of Athol, Mass., contains an appreciative sketch of L. S. Starrett, president of the L. S. Starrett Company, indicating the high regard in which he is held by his fellow townsmen and those who know him intimately. In 1868 Mr. Starrett began his business there as general agent and superintendent of the Athol Machine Company. In 1880 his present business was established with a modest beginning, Mr. Starrett having at one time only ten men in his employ, but its operations gradually assumed such dimensions as to require the employment of from 400 to 500 operatives.

DIRECTORY OF MANUFACTURERS.

"KNAUER'S Manufacturers of the United States" is the title of a classified reference book for buyers and sellers for domestic and foreign trade, just published by the Manufacturers' Red Book Publishing Company, 225 Fourth avenue, New York. This is the fifth edition of the work, which originated in 1882. Some idea of its scope is indicated by the size, there being 2600 pages, each 9 x 12 inches, bound in red cloth boards and arranged with a view to annual revision. In the book, the company says, are 512,734 classified names and addresses of manufacturers, with their product of 52,596 articles. In front is an index of articles covering 241 pages, four columns of matter to the page, and independently numbered. The book also supplies the names of export and commission merchants in the United States. Manufactured articles are named in great variety and exhaustively subdivided for easy reference. Directly underneath the name of each article is given parenthetically, in italics, a Spanish translation. In classifying the names of manufacturers they are arranged alphabetically by States for convenience in circularizing. Another feature, as yet only partially carried out, is the giving in units of thousands of dollars the amount of capital invested in business, as claimed by the different manufacturers.

DEATH OF JOHN BUTLER TALCOTT.

JOHN BUTLER TALCOTT, a director of P. & F. Corbin and the Corbin Cabinet Lock Company, died at his residence, New Britain, Conn., February 21, aged 80 years. He was born at Enfield, Conn., Sept. 24, 1824, and was graduated at Yale University in 1846. His earlier life was devoted to teaching and to the study of law, but though admitted to practice at the bar of Connecticut he abandoned the career for manufacturing. In 1857 he went to New Britain and was a founder of the knitting business which grew into the New Britain Knitting Company. He was interested in other textile industries, as well as in the great Hardware companies of his city. He was Mayor of New Britain from 1880 to 1882 and held many other offices of financial and municipal importance. He leaves a widow, two daughters and a son, George Sherman Talcott.

CONTROLS THE SELLING PRICE.

F. E. MUZZY, vice-president of the J. Stevens Arms & Tool Company, Chicopee Falls, Mass., asks that we correct a wrong impression left by our report of his remarks before the Iowa convention in our issue of February 16. While his company for a time refused to sell to mail order houses and expended a great deal of money and effort to shut off the avenues through which the catalogue houses could secure Stevens goods, it is now selling the catalogue houses, having gained its point of controlling the price at which such houses should sell the Stevens goods. Prices are so controlled by the company that the retail selling prices of the mail order houses are sufficiently high to permit the retailer to buy from his jobber in the regular way and to sell at a legitimate profit.

A. J. HARWI HARDWARE COMPANY'S CATALOGUE.

THE A. J. HARWI HARDWARE COMPANY, Atchison, Kan., has just issued a fine large illustrated descriptive catalogue of Shelf and Heavy Hardware, Tinware, House Furnishing Goods, Sheet Metals, Cutlery, Iron and Steel, Stoves and Ranges, Guns, Ammunition, Sporting Goods, &c. It contains 1039 pages, each 9 x 12 inches. This is the first large catalogue the company has issued since the establishment of the business in 1875. Copies sent to the trade in Kansas, Oklahoma, Indian Territory, southern Nebraska, eastern Colorado and northwestern Missouri are bound in heavy cloth covered board covers. For their traveling men, bill clerks and city salesmen a loose leaf style is provided.

Minnesota Retail Hardware Association.

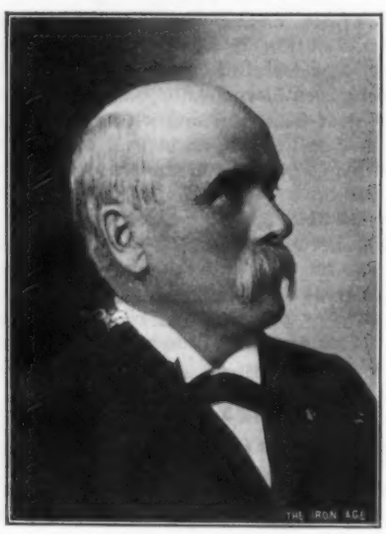
WHEN the Duluth delegation presented its case before the convention last year at St. Paul it promised that if the association would select Duluth as its next meeting place the city authorities would arrange for a special consignment of spring weather during the convention period. This promise, made in jest, was fully fulfilled, for the ninth annual convention assembled in the Commercial Club rooms last Wednesday under perfect weather conditions, with warm south breezes and bright sunshine that made the snow vanish almost magically.

Hon. M. B. Cullum, the Mayor of Duluth, delivered an address of welcome, which was as cordial as had been the invitation presented at St. Paul. President A. T. Stebbins replied with equal felicity.

President's Annual Address.

The president then delivered his annual address, most of which is given below:

I extend to you my greeting and bid you a hearty welcome to this our ninth annual session. We have met



A. T. STEBBINS.

in this annual convention to review the past, discuss the present and make plans for the future. It is interesting to go back over the history of our organization and note its growth and achievements. Nine years ago a few of us met at the Capitol Building in St. Paul and there organized the Minnesota Retail Hardware Association. It was largely through the untiring efforts of our first president, C. F. Ladner, that we were then and there brought together. The gathering was not a large one, but the dealers present were enthusiastic and fully comprehended the possibilities and needs of an organization. Under an able leadership, guided by strong minds, we have steadily grown year by year, until to-day we lead all other State associations in point of numbers, our present membership being about 650.

With such a membership we have been able to wield an influence, and hence when we have asked the jobber and manufacturer to respect our rights our requests have been respected.

THE YEAR JUST PASSED

has been a progressive one to our State Association, yet unmarked by any special feature. Assisted by your able Executive Committee and aided by your indefatigable secretary, my labors have been made easy. The Executive Committee has met once a quarter during the year. We have carefully considered every complaint that has been made, and in most cases satisfactory explanations have been made and agreements entered into.

DISLOYALTY OF A FEW RETAILERS.

One complaint has been made, however, that as yet we have been unable to reach, and it is with feelings of deep regret that we are compelled to report that some retailers in this State as well as in other States, for a 5 or 10 per cent. consideration, are furnishing catalogue houses with goods made by manufacturers who refuse to sell their products to these houses. This example of diloyalty is to be regretted. We are charitable enough, however, to believe that the parties so implicated do not fully realize the possible results of their actions. If we would command the respect and confidence of the manufacturers and jobbers and expect their co-operation we must act our part well. That such transactions are confined to a very few we fully believe, and we hope we may never again hear of a like occurrence among Minnesotians.

IMPORTANT LEGISLATION.

We have by resolution and personal letters taken up matters of vital interest with our Representatives in Congress, such as the parcels post bill, the anti-trust bill and the now famous Esch-Townsend bill, which bill seeks to clothe the Interstate Commerce Commission with power to regulate railroad rates and prevent discriminations. These are matters of vital importance to the commercial interests of the country and should receive our consideration.

Our insurance department has not been allowed to drag, but on the contrary has been pushed with zeal and energy by the president and secretary of the company, as their reports will show.

The quarterly meetings of the association have been characterized by a desire to promote and protect the best interests of all the members. Peace and harmony have ever prevailed, and we express the hope that our labors and actions will meet your approval. But the work of this and other kindred associations will not cease so long as we have an existence. Clouds that have crossed our pathway have not all been dispelled and others are continually forming. Trouble seems to be about the only thing that is equally distributed in this world.

COMPETITION OF PEDDLERS.

Not only are we menaced with the literature that finds its way into the homes of our customers, which we cannot and do not expect fully to eliminate, but there is another source of our discontent which we may by united effort regulate if not eliminate, and that is the unscrupulous peddler, who, with glibness of tongue and tricks that are vain, preys upon the pocketbook of the unthinking, to the detriment of both the purchaser and the responsible merchant. Peddlers' license bills without number have been presented to our Legislature, but some lawyer or Judiciary Committee, in the fancied interest of their rural constituents, have pronounced them unconstitutional and thus put the measures to sleep. Other States have laws governing peddlers and traveling merchants that are effective and constitutional. Why cannot Minnesota have such a law? We can if the members of this association join with the members of the Grocers' and other associations and request the representatives of their respective districts to support the bill now pending.

REGULATION OF RAILROAD RATES.

Railroad charges is a subject that should be considered and discussed in our meetings. Not only are rates in many instances exorbitant and discriminations prevalent, but in many instances classifications are unjust, overweights are numerous and claims for damage are slow in settlement or pigeon holed altogether.

UNJUST TAXATION.

That aggregation known as a State Board of Equalization, which raised the assessment on stocks of goods

25 per cent. at its last meeting, should not escape our notice. The present methods of taxation in this State are far from perfect. There are several bills now before the Legislature seeking to revise our tax laws. I would ask that these, and all matters pertaining to legislative enactments, be left to a special committee or to the Executive Committee, with instructions to co-operate with other commercial bodies in a combined effort to secure more equitable and just laws along the lines herewith indicated. Needed legislation as well as trade relations are very proper subjects of discussion if we would justify our existence.

MEMBERS URGED TO TAKE MORE ACTIVE PART.

In arranging the programme for this session we have not secured as many responses to requests to prepare papers for discussion as we could have wished. We must therefore rely upon the Question Box for subjects to be presented. Far be it from my intention to give you a lecture, but I do desire that every member will feel called upon to rise to his feet and, with some experience or suggestion, add to the success of the meeting.

Let us make good any reputation we may have obtained. One member of a neighboring State Association was heard to remark that he was going to attend the Minnesota Association, for that is where they do things. Brother Hardware dealers, it devolves upon you to do something to keep your association in the front ranks.

THE FUTURE IS FULL OF PROMISE.

We may not be able to do all we desire, but much has been accomplished and more remains to do. The broadening influence of our convention through the Joint Committee with the manufacturers is very important. Matters that would otherwise not come up are thus brought to the attention of these different organizations, and harmonious relations are being promoted, based upon a knowledge of facts and a just recognition of the deference which must be paid to all interests. The work that is being done by open minded and progressive business men must redound to the benefit not only of the members of this organization, but of the trade at large.

QUANTITY PRICES.

Among the important questions that have been brought before the manufacturers by this Joint Committee is that of quantity prices. We as retailers contend that the manufacturer should have one price for the jobber and another for the retailer. Why should the large retailer buy his goods as low, or lower even than the jobber, to the disadvantage of the smaller retailers? The country is agitated as never before over the bill now pending in Congress relative to discriminations in freight rates. If it is a moral crime for railroads to discriminate in favor of large shippers and thus freeze out the small shippers, why is it not just as much of a crime against morality for the manufacturer to discriminate against the small retailer?

TRADE PAPERS.

Much of the success of our association is due to the splendid work done in our behalf by the trade papers. They have fought our battles in an honest attempt to overcome some of the irregularities of the trade, have given us full and complete reports of all Hardware conventions, by which means we all get the benefit of the discussions and suggestions of the members of sister associations. The leading trade papers are represented here at this session, and I would at this time, in behalf of this association, extend them a cordial welcome, and would I had the talent to fittingly express our appreciation of their services past, present and prospective. We hope to hear from them ere this session closes on their impressions of the business of associations from two standpoints —viz., work well done and work left undone—especially the latter, for it is by just criticism that we are enabled to see ourselves as others see us, "right or wrong; when right, to be kept right; when wrong, to be set right."

COMMERCIAL TRAVELERS.

It is a source of pleasure and gratification that we have so many of that army of magnificent men, the traveling fraternity, with us. We consider them our allies. They come to us in our places of business with a smile and ofttimes the latest story. They tell us of the new goods and new prices and advise us when and what to purchase. If depressed, they cheer us with the hope of better prospects and improved conditions. We are more than glad to have a representative on our programme, and to have you feel that you are ever welcome. Here's to your health and happiness.

MUTUAL INSURANCE.

While the president of the Minnesota Retail Hardware Dealers' Insurance Company and the Insurance Commissioner of Minnesota are to talk to us on insurance, yet I feel that I cannot close without saying a word. It is the one subject that interests us all. I take it for granted that every member is interested in this feature of our organization to the extent of a $3000 policy. If not, just take a little friendly advice and make your peace with Secretary Mathews at once. If we had no other excuse for existence this feature would suffice. Insurance with our company is as safe as with any old line company in the world and at a cost of less than two-thirds. It has been a success from the start, and I earnestly recommend it to your careful consideration.

DATE OF MEETING.

The winter months seem to be the best time of the year to hold our conventions, especially February, when our members are through invoicing and feel like taking a little recreation during the dull season, as evidenced by the fact that no less than 13 associations hold their meetings in February. This makes it inconvenient for the representatives of the trade papers, and makes a busy month for the officers of the National Association, whose attendance is so earnestly desired by each and every State. Our by-laws provide for our meetings to be held the fourth Wednesday in February. I would recommend that this be changed and the date left to the Executive Board, who can arrange with national officers if deemed advisable.

INTEREST IN PUBLIC MATTERS.

As citizens we should all have an interest in all public matters. As a commercial body we should assist in molding public opinion upon the right side of all important questions, for public opinion, once stirred, is higher than any law, or even than that high and mighty body, the Senate of the United States.

In the language of President Roosevelt, we are living in a strenuous age. In the mad rush for wealth men with power are forgetful of their moral obligations and seek by fair means or foul to ignore the rights of others and to crush them under the heel of oppression. To accomplish these results they form combinations and associations, until to-day nearly every industry of any magnitude is controlled by soulless corporations. To combat these influences this and kindred organizations have been formed, and upon their actions and the action of individual members depends our success or failure. There are four factors that enter into our commercial existence, the manufacturer, the jobber, the retailer and the consumer.

The retailer's position in this mighty aggregation of commercialism is the least enviable. He is placed between the upper and nether millstones. He stands between two credit departments of the commercial world, the credit rating machinery on the one side and the credit asking system on the other; between the limited guaranty of goods on the one hand and the unlimited demand of a full guaranty on the other, and between the tax gathering system and the tax dodging element he stands as taxpayer.

But a new standard of American citizenship is being set up. Its champion is President Roosevelt. I believe that the dawn of a new and better existence is approaching, and that as a result of the standard commercial selfishness will receive its death blow, and many of the evils that have afflicted the corporate life of man "Shall live but in the memory of time, which, like a penitent libertine, shall start, look back and shudder at his former years."

Convention Committees.

The following committees were appointed and announced by the chair:

PRESS: E. K. Evans, Princeton; H. P. Heifer, Barnesville; O. G. Hanson, Rochester.

AUDITING: Lewis Cosgrove, Le Sueur; W. H. Close, Hibbing; S. E. Hunt, Red Lake Falls.

RESOLUTIONS: W. B. Marr, Aitken; Mr. Stremell, Minneapolis; L. K. Dougherty, Duluth.

GRIEVANCES: C. A. Olson, Willmar; Mr. Deush, Long Prairie; H. A. Lervy, Alexandria; J. J. Krake, Melrose; J. E. O'Brien, Crookston.

RECEPTION: C. W. Bouck, Royalton; J. G. Pease, Superior; George Powers, Duluth.

C. W. Bouck, Royalton, was chosen sergeant-at-arms.

Secretary's Report.

The secretary's report showed the association to be in a prosperous condition, leading all other State associations in membership enrollment. This report is as follows:

In preparing the customary report from year to year it is extremely gratifying to be able at each succeeding meeting to record a marked advance in the growth and prestige of our association. Minnesota is again able to score the customary lengthening of the membership roll. In our list may be seen quite a number of names belonging to enthusiastic members who, but a year or two ago on being asked to join the association declined on the ground that no benefit could be derived and it was use-

M. S. MATHEWS.

less for a busy man to spend valuable time in any such movement. The situation now is different, and while doubtless there are members who remain with us solely for the insurance benefits the great majority are in it because the direct gains from associated effort are large, and, I may add in passing, only a fraction more than two-thirds of our Minnesota members carry insurance with our Mutual Insurance Company.

Thanks to the splendid work of the National, much ground has been gained in winning the pledged support of many leading manufacturers in standing by the retailers on the question of marketing their product along so-called regular lines of trade. Reform at the present time is most active at the point it logically should be—at the starting point and where the goods are made. But few realize the substantial progress already made and the bright outlook for the immediate future. That hustling head of the National Association, President Bogardus, has promised to be here and will show us what has been accomplished and outline the work for the coming year.

NEARLY 650 MEMBERS.

Approximately, two-thirds of the Hardwaremen of the "bread and butter" State are members of their State Association, and it may be safely stated that while there are many good Hardwaremen outside the ranks the great majority of desirable members are already on our lists. Our increase in membership continues about as in the previous year. The souvenir annual for 1904 contained 566 names. To-day the paid memberships are 644, and while there seems to be a general awakening in Hardware circles all over the land, it is hoped and believed that the Minnesota Association will remain at the head of the procession.

FINANCIALLY,

we are in comfortable circumstances. At the beginning of the association year, March 1, the condition was as follows:

Receipts.

Balance on hand	$385.37
Fees and dues	1,848.00
From advertising	227.59
Total	$2,460.96

Disbursements.

Directors' expense	$382.90
Salaries	600.00
Printing	43.16
Traveling expense	68.96
Postage	86.90
National memberships	552.00
Rent	80.40
Miscellaneous expense	26.20
Balance on hand	620.44
Total	$2,460.96

DATE OF ANNUAL MEETING.

At the last annual meeting in St. Paul your attention was called to Article 4, Section 1 of the constitution, which provides that the annual meeting shall be held "on the fourth Wednesday of February." Nearly all of the State associations now leave the date open and its selection with the Executive Committee. Under such a provision dates can be made less in conflict with meetings of other State associations, thus making it much easier for traveling and trade paper men to be with us, and also giving greater assurance of the attendance of one or more national officers. There is still another consideration. The best railroad rate we are able to secure is one and a third fare for round trip. During the latter part of the winter and extending into the spring, so-called merchants' excursions are at intervals arranged for at a rate of fare and a fifth. Our dates being fixed and the other schedules being either too early or too late to be available for our meetings we are unable to profit by the cheaper rates and advantages offered. It is asked that you consider the advisability of making the suggested amendment to the constitution.

You will notice in the advertising pages of our programme many familiar and some new names. To their liberal favors much of the success of this meeting is due, and the secretary earnestly requests that where possible you show by your patronage a substantial appreciation of the same. It is also noticeable that the traveling men in increasing numbers pay us the compliment of attendance on our meetings. They are all friendly to this association, and to their missionary work in the field we are indebted for a considerable number of our memberships, and we bespeak for them your courtesy and cooperation.

Mr. Evenson's Address on the Advantages of Membership.

Geo. M. Evenson of St. Peter, the vice-president of the association, delivered an eloquent and forceful address on the advantages of membership in the Minnesota State Association. At the outset he said that the presence of so many dealers in the hall showed that they had already settled that question for themselves, and held up to scorn and ridicule the short sighted retail Hardware dealers who willfully persisted in depriving themselves of the advantages of widening their business and intellectual horizons such as were offered by the State conventions. He narrated graphically a typical experience in which the broadening influence of the State convention brought two hostile competitors together under a bond of fellowship, resulting in the permanent reconcilement of differences, followed immediately by mutual agreements to cease ruinous price cutting, and ultimately in the formation of a splendid local association.

He told of a dealer of his acquaintance who had steadily refused to acknowledge the possible benefits to him of membership in the association until he was con-

fronted with unfair competition from the outside which he was powerless to overcome but which was promptly remedied by the association. He soundly scolded members present for being selfish enough to sit still and silent, always receiving suggestions but never offering any from their own experiences. "The association," he concluded, "broadens and educates its every member, and under its inspiration our business becomes a wonderfully interesting profession rather than a round of daily drudgery."

Gifts for the President.

C. F. Ladner, St. Cloud, read a letter from J. F. McGuire of St. Paul, who could not be present at the first day's session, in which its writer presented to the president, with his compliments, a beautiful silver plated gavel made from Minnesota metals by students of the Mechanic Arts High School of St. Paul. The same donor also presented a cleverly fashioned question box made by the students of the same school. These gifts President Stebbins acknowledged fittingly.

Local Advertising.

C. H. Casey of Jordan read a paper on "Advertising a Hardware Store in a Country Town," which was printed in last week's issue of *The Iron Age*.

This paper was followed by a spirited general discussion, led by W. E. Davis, the editor of *Hardware Trade News* of Minneapolis, who called attention to excellent local advertising that was being done by Mr. Evenson of St. Peter, J. E. O'Brien of Crookston and Houghtaling & Coult of Fairmont. Mr. Evenson and Mr. Houghtaling told many interesting details of their methods and the success attending their efforts.

Mailing Lists.

The difficulty and the importance of having live, corrected mailing lists were discussed. Mr. Evenson said he got lists from rural carriers before they were prohibited from furnishing them and kept them corrected by asking his country customers when they came in whether their neighbors' names were properly given. It was also suggested that the prohibition of giving lists by rural carriers did not extend to their wives. Mr. O'Brien said he used as the basis of his lists the personal property tax lists of each township in which he operated.

Prices and Price Cards.

Members differed as to the advisability of naming prices in their local newspaper advertising, some holding that such publication gave their competitors exactly the information they wanted to take away the trade of the advertiser by meeting or cutting the published price. Others were strongly in favor of naming prices in their advertising as the best means for securing direct returns.

On the subject of price cards the consensus of opinion was in favor of their liberal use in show windows and on the counters, the fact being emphasized that it was not necessary to name a cut price on goods thus ticketed in order to secure a greatly increased sale of them.

Some Practical Advertising Suggestions.

Mr. Evenson told of his successful use of steel baskets filled with small sundries placed on a bench outside of his display window, the goods being labeled with price tickets. He explained how he had borrowed a type founder's catalogue from his printer and from it learned how to print with his brush sightly window cards, telling his hearers also of his success in the use of the pantograph in copying, enlarged or reduced in size, illustrations from catalogues, books, circulars and newspapers. He also informed the members how they could make durable and inexpensive colors for use on show cards by mixing dry pigments of the desired colors with pure gum arabic to a pasty consistency and keeping them in tightly covered tin salve boxes, using moist camel's hair brushes, just as an artist does with the dry water color paints.

Manufacturers' Literature and Cuts.

The discussion developed the fact that much of the literature and many of the cuts furnished to dealers by manufacturers were useless. An electrotype of a Stove company's trade-mark, for instance, was cited as a good example of the sort of cut that it would not pay a dealer to use in his local paper, as his rival dealer who used a cut of a Stove or Range would get the business. The average manufacturer, it was stated, furnished circulars that were too technical and which shot over the heads of the great majority of Western rural buyers.

Mr. Houghtaling, in telling of his experience, sounded the very keynote of successful advertising. Said he: "I never studied advertising, I just talk to the people in my ads. the same as I do when they come into my store." He told how he had several portfolios of good advertisements clipped from the big daily papers and from magazines, and that he found that he could in this way very profitably copy or adapt other people's ideas when his own ran dry. He said he wished the manufacturers would spend the same money in furnishing good cuts to the retailers that they do in their advertisements in high priced magazines, and told how he had supplied his local editor with manufacturers' cuts which he ran without charge whenever he wanted something to fill up.

In this connection attention was called to the publication in patent insides of country papers of advertisements of mail order firms, and interesting experiences were recounted as to the success with which merchants in various parts of the State had induced local editors to discontinue the use of patent insides containing such advertisements.

Local and County Associations.

One of the queries drawn from the Question Box asked for information as to the best method for forming county or local associations. President Stebbins explained in detail the system in vogue in the Olmsted County Association, in which all the merchants in the county are members of an association which interests itself largely with the matter of collections and credits. C. H. Casey told of the organization of the merchants in five towns in Scott County. Julius Schmidt gave interesting information concerning the workings of the association in Wabasha County. Other members discussed the importance of local associations not only in the matter of local affairs, but in their value in increasing the membership of the State Association.

Selling Stoves on Installments.

Another question drawn from the Question Box asked whether members had found that it paid them to sell Stoves on small monthly payments, and, if so, on what terms. This question resulted in a general discussion, in which Messrs. O'Brien of Crookston, Hauser of Rochester, Ladner of St. Cloud, Schmidt of Wabasha and others took part. Experiences seemed to differ, but the preponderance of evidence was in favor of the sale of Stoves on small weekly or monthly installments, charging about 25 per cent. of the selling price for a first cash payment, followed by from 10 to 25 per cent. a month thereafter. One member discovered to his sorrow that his leniency in extending or deferring the payments on a note given him by a customer had the result of making the note valueless, the customer successfully defying him to collect payment. Mr. Ladner used a contract note which expressly stipulated that the Stove belonged to him until it was fully paid for, while another member found that it was successful to accept an old Stove or Heater in lieu of first payment, leasing the new Stove sold on certain stipulated terms, and giving the purchaser a bill of sale when a certain portion of the payments had been completed. During the discussion it became evident that it was highly important that Stoves or other merchandise be not sold on the installment plan before thoroughly investigating the earning power of the applicant for credit and as much as possible his habits and reputation.

Farmers' Co-operative Store.

Considerable time was devoted to discussing this subject, and testimony from various parts of the State was to the effect that these farmers' co-operative stores made money for no one but for the shrewd professional organizers, and that after a period of from 6 to 18 months the farmers who had been induced to invest their money in such a scheme were left high and dry with neither

money nor store. Names of several so called Leagues, Buyers' Unions and Co-operative Societies, with headquarters in Chicago, were mentioned in the discussion.

Mutual Insurance Association.

When the association convened Thursday morning it was turned over to the insurance section, Charles F. Ladner, the president of the Insurance Association, presiding. He did not attempt to give a regular annual address, but spoke informally of the great success which had attended the efforts of the officers and members of the association.

The report of the Auditing Committee showed the following:

Certificates of deposit	$22,000.00
Adjudicated judgment, St. Cloud	21,469.50
Cash balance in bank	15.32

The committee consisted of L. E. Wakeman, D. R. Thompson and Nels S. Taarud.

The same committee recommended that an amendment be made to Section 6 of the by-laws to the effect that any policy holder not making his premium deposit with the secretary within 30 days of the expiration of the policy such policy should be subject to immediate cancellation within ten days from notice of such expiration. On a motion by Mr. Sitts the amendment was unanimously adopted after thorough discussion.

INSURANCE SECRETARY'S REPORT.

Following was the report of Insurance Secretary M. S. Mathews:

Hardware mutual insurance is one of the live questions of the hour, and probably at no previous time has it been given such general attention as during the past winter. Hardwaremen generally are alive to the fact that it is the only way out; that it is practical, sound and cheap. It has come to an increasing number of dealers that as they in all cases participate in losses and expenses, why not be in with the profits as well? Profits in some cases are considerable, as witness the recent report of the Hardware Mutual in the State immediately to the south of us. This report shows, with nearly 500 policies in force, that during the year 1904 losses were sustained to the amount of $2.73. With the Hardware mutuals you participate in "fat" year savings as well as "lean" year losses.

The amendment last year to "Articles" permitting the insuring of members' homes and household goods and extension of term to three and five years as desired has not been taken advantage of by members as generally as expected. You are reminded that the same proportionate savings can be made on this form of insurance as on your commercial lines.

Volume and Growth.

Losses have been unusually numerous and severe the past winter, but up to the present time of writing none has been reported for February. The volume of business is now so large and growth so steady that while an accumulation of losses cuts into the surplus somewhat the setback is only temporary, as the financial high water mark is soon reached again and passed. This company now has policies in 24 States, and as it claimed that well scattered risks are a prime factor in successful underwriting, it would seem our position from this point of view is all that could be desired. The expense account is again showing the modest figures of 10 per cent., and although losses reached the unusually high mark of 38 per cent., the business of the company was conducted on less than one-half of the amount of premiums written. The sum returned this year to the policy holders approximates $15,000, which, in other words, is a net saving.

Although the losses were twice as great during 1904 as in any previous year, at the same time each expiring policy received a return premium of 30 per cent. of original premium paid; an increase of assets was shown to the amount of $12,086.15, and an increase in net surplus of $8878.84. As showing the strength of the company, it may be stated that at the close of business December 31 the net assets were sufficient to go back and again pay every loss and every expense incurred since organization and still have money remaining in the treasury.

Mutual Insurance Is Here to Stay,

and it is to be regretted that one-third of the association members in Minnesota have as yet seen fit to carry their insurance elsewhere. However, it is a matter of but a little time when, with the ever increasing rebates, the appeal will be so strong it cannot be ignored. During the earlier days of this company, and when its future was in doubt, much service was rendered it for which no adequate return was made. At the present time, while in possession of no funds which can be squandered, it has ample means with which to pay its way. Some of the younger Hardware mutuals are now paying their officers a small stipulated sum for services, and the secretary would here remark that if the president and treasurer of this company were receiving similar compensation he would feel more free to repeat the ever increasing calls upon their time. To these gentlemen, with the hearty cooperation of the Board of Directors, much of the success of this company should be attributed. The trade papers also have given us much valuable space and their vigorout support should receive your hearty appreciation.

TREASURER'S REPORT.

The report of H. Hauser, Minneapolis, treasurer, showed the following figures:

Receipts.

February 25, 1904, balance in treasury	$37,544.38
Received 82 deposit slips	33,371.13
Received interest	1,542.27
Total	$72,367.78

Disbursements.

Paid 272 orders	$29,149.71
February 20, certificates of deposit, Northwestern National Bank	21,000.00
February 20, judgment, St. Cloud	21,469.50
February 20, daily balance in Northwestern National Bank	748.57
Total	$72,367.78
Total balance in treasury, February 20	$43,218.07
Interest due on $11,000, February 27, 3 per cent.	330.00
Interest due on $4,000, March 7, 3 per cent.	120.00

DIRECTORS ELECTED.

The following directors of the Insurance Association were elected:

W. H. TOMLINSON, Le Sueur to succeed himself.
ELMER HOUGHTALING, Fairmont, to succeed E. H. Loyhed.
FREDERICK W. LUCAS, Litchfield, to succeed himself.
W. J. URBATSCH, Austin, to fill unexpired term of Mr. Roell of Owatonna, resigned.

IOWA MUTUAL INSURANCE.

A. R. Sale of Mason City, Iowa, secretary-treasurer of the Iowa Insurance Association, addressed the convention. He said that the success of the Minnesota Insurance Mutual Association was the chief inspiration that led to the formation two years ago of a similar association in Iowa—an association that had prospered and had now on its books insurance amounting to over $750,000, of which $48,000 had been placed with the Minnesota Association. The first year, he said, his company had given a rebate of 20 per cent., and 25 per cent. the second. He spoke of the excessive rates charged by stock companies. He commended the Minnesota Association and congratulated it on having been able to declare a dividend of 35 per cent.

The chairman told of his visit to the Iowa Association and suggested to the members that they could do no better than to place a portion of their surplus fire insurance with the Iowa Association, addressing A. R. Sale, the secretary, at Mason City, Iowa.

Greetings.

The insurance session was adjourned at 10.30 a.m. and was immediately followed by a general session. Greetings were read from the Indiana and Missouri associations to which President Stebbins said suitable replies had been made by wire.

Report of National Convention.

C. D. Decker, delegate to the national convention at Indianapolis, who had been instructed to make a report before the present session, was not present, and in his absence W. H. Tomlinson, vice-president of the National Association, made a brief report of the work accomplished.

He expressed the belief that the National Association was accomplishing a grand work and that all real reforms desired by the Hardware dealers in the country could best be wrought by the national body.

Nominating Committee.

The following Nominating Committee, one from each Congressional district, was announced by the chair:

First District.—Geo. Schwirtz, Wabasha.
Second District.—Chas. Grill, Sherburn.
Third District.—Geo. Mason, St. Peter.
Fourth District.—J. F. McGuire, St. Paul (chairman).
Fifth District.—J. O. Roberts, Minneapolis.
Sixth District.—H. A. Le Roy, Alexandria.
Seventh District.—W. B. Gislason, Minneota.
Eighth District.—W. B. Marr, Aitken.
Ninth District.—Jas. E. O'Brien, Crookeston.

Scientific Salesmanship.

W. H. Tobin of the Sheldon School of Scientific Salesmanship read a paper on the science of selling. On invitation by the president Mr. Tobin followed his paper by explaining the method of his school and the cost of scholarship.

North Dakota's President Talks.

H. F. Emery, president of the North Dakota Association, on invitation of the chair was called to the speaker's rostrum and brought the greetings of the North Dakota Association. He said that he had come to learn rather that to talk. He paid a glowing tribute to the State of Minnesota. Minnesota, he said, was the first to form a mutual insurance association. The Minnesota Association led all the rest in membership and in the force of its influence.

Jobbers' and Traveling Salesmen's Session.

At the opening of the Thursday afternoon session the president announced that the meeting was thrown open to jobbers and traveling men. P. W. Lyon of Janney, Semple, Hill & Co., Minneapolis, delivered a stirring address, from which we make the following extracts:

Mr. Lyon's Address.

The secret of American greatness is not difficult to discover when men, honest of intention and earnest in desire, gather in conventions like this for the common purpose of perfecting their equipment in life that they may be better able to wrest from the soil, the mine and the great channels of commercial life larger returns for labor expended. Your presence here to-day indicates clearly that you are not entirely satisfied with the work of the past, brilliant though your success may have been. You are here with a firm desire to put a keener edge on your weapons of warfare for the commercial strife to which you will shortly return.

In Hardware merchandising there are just three important considerations—1, buying; 2, selling; 3, collecting.

BUYING.

A simple analysis of this function of the merchant would result as follows: First, do not overbuy. Ninety per cent. of the merchants of this State doubtless found on January 1 several hundred dollars more stock on hand than on the same date a year ago. Why? In some cases this was the legitimate result of increased trade demands, but in the majority of instances it can be directly traceable and is the logical outcome of ignorance of stock on hand and too little backbone in dealing with travelers. This, to my mind, is a growing evil with retail merchants, who could they but see it fairly and squarely and follow it to its logical outcome would agree that the practice in almost every instance is a pernicious one, which in no way helps to swell the profits, but results naturally in placing upon the shelves a surplus of stock not demanded by the business and ties up capital which might be made to earn its just share—namely, the practice of buying direct from manufacturers such lines as are carried ordinarily by jobbing houses in the State of Minnesota.

Never buy an article simply because it appears to be a snap. It may be a cold snap before you get through with it. Know first if such lines are subject to ready sale.

In every retail as well as wholesale stock there are a limited number of lines which are subject to more or less fluctuation in price. Know these, watch them carefully, know when and how to buy, as you will find by careful analysis of your business that they constitute a considerable portion of your sales and are therefore extremely important.

Do not scatter your purchases. Within the confines of your own State there are ample facilities for buying right. I say this because, in the first place, an enormous development has been in progress in jobbing stocks for the past quarter of a century, bringing them up to the point where they are fully adequate to local demands.

Second, because no commercial institution out of the State can be in the very nature of the case so keenly interested in your success as the jobber right here, who, like yourselves, is amenable to the laws of and a part and parcel of this great Commonwealth of which we are so justly proud. And let me say right here that it will cost Minnesota merchants no more to build up the jobbing interest of their own State than if the business is placed outside with concerns whose representatives they seldom, if ever, meet, and who are the first to drop Minnesota when she is in trouble and in need of help, and the first in when there is plenty of money in sight, ready to take

P. W. LYON.

to a foreign State trade and profits to build up outside institutions, while Minnesota jobbers carry the bag when rust, drought and frost force the retail merchant to cover.

SELLING.

In the first place, permit me to remind you that you are in business to make an honest and full measure of success in life, to accumulate for your own and your family's benefit as large a sum of the lawful money of the United States as possible in the shortest space of time. Therefore a price must be put on every article that will insure without fail the results outlined. We are told that salesmanship is a science. We believe in this. We also believe that salesmen are in a measure born, but certain it is that any man who is willing to put up his time against the careful study of himself and good methods will find his equipment much improved as a direct result. Let me hammer into a few sentences what I think about selling:

1. Advertise judiciously.
2. Insist on affability, from the head of the establishment to the lad who runs the delivery wagon.
3. Make no distinction in treatment between the meanest and best customer on the books.
4. Never let your personal trouble affect your trade manners.
5. Know the personal character of every customer and adjust your methods to his case.
6. Spend as much time as possible near the door of your establishment.
7. Remember that a customer neglected is often a customer lost.
8. Be even tempered. "The same yesterday, to-day and forever."

9. Do not sell just to be selling. Sell with a view to collecting.

10. Keep a job counter, and, when your buying judgment is at fault, put that article on that counter.

COLLECTING.

Any man of moderate ability can buy right. Any man of mediocre accomplishment can sell goods, but the merchant who in his business education has failed to appreciate the importance of acquiring both the art and the backbone to collect his bills properly is still on the off side of success and always will be until he gets right on this simple but extremely important function of the business. Take first the simple matter of interest. Is there any good reason why a purchaser should not pay interest on a past due open account? Will the bank loan him money on any other basis than interest "before and after maturity," and is the nature of his obligation to you any different? But you say, "My competitor does not charge interest." Then it is your business to place carefully before him the loss he sustains, making a strong endeavor to get him into line with you. It will pay. Let me make a prophecy just here: The time is coming when every purchaser, from the manufacturer to the retailer, owing to the constant reduction of profits, will be compelled to look more carefully to the economies of his business, one important item of which will be an interest charge on every sale after the due date, whether a note is taken or not—and the principle is absolutely right. Did it ever occur to you that almost every dollar of past due accounts owing by the retailer to the jobber represents borrowed capital on which that same jobber is paying some banking house an interest charge? Again, do you realize that in order to come out with a whole skin these same jobbers must charge you interest on past due accounts which represent goods in the farmer's hands, owing to you, on which many times you do not charge nor receive a penny of interest?

Briefly stated, the situation is this: If the manufacturer must pay his banker interest on borrowed money, to enable him to place in the hands of the jobbers such a volume of merchandise as will meet the natural demand of trade, and in turn the jobber must borrow to pay the manufacturer, and you must borrow oftentimes from the jobber, if not money, goods which are equivalent, and pay interest thereon, why is it not equitable and just to carry the proposition to its logical conclusion and charge interest to the farmer on every dollar on the books that has passed the due date—viz., 60 days from the date of purchase, note or no note? Bear in mind the fact that, although you have put the farmer's account into a note, this does not make the interest charge any more just, the obligation exists in the open account as fully. Your note, however, is a very good medium of collection, as it establishes the debt beyond dispute and make its collection easier. Now let me lay down the following principles in regard to collections:

1. The ease or difficulty with which you collect will depend largely on how you educate your debtor.

2. Make him understand that you expect him to pay just as much as you expect him to buy.

3. Be prompt in rendering statements of your monthly accounts.

4. Keep your books so you can give him his balance any time of day or night.

5. Do not approach your debtor in an apologetic fashion; let him make the excuses.

6. Never let the loss of trade deter you from collecting just debts.

7. Collect just as pleasantly and persistently as you sell.

H. D. Final's Address.

H. D. Final, sales manager for Marshall-Wells Hardware Company, Duluth, addressed the meeting. He urged the dealers to carry a more complete variety of qualities of standard lines, so that they should not only have cheap goods to answer the desire of the cheap man, but should have good goods for the better class of trade. He advised members to use of their advertising expenditure and efforts in exploiting the qualities of new goods, as well as in discovering new excellences of old ones. He made a plea in favor of the local jobber as against the jobbing catalogue houses.

Mr. Kirk's Address.

R. A. Kirk, president of Farwell, Ozmun, Kirk & Co., St. Paul, spoke of the bright prospects before the State for the first half of this year at least, and of the fact that prices promised to be steady. He urged the members to push the sale of special brands as a valuable means for competing with catalogue houses, because such special brands are never seen in retail mail order catalogues, and for that reason they can be sold at better profit than is possible with standard manufacturers' brands. On the subject of side lines, he called attention to the rapid evolutionary changes which led the wholesaler to add greatly diversified stocks, and he believed the retailer would do well to follow the jobber's example. Side lines, however, should be sold at profit making prices. He told his hearers that too many of them gave too much attention to low priced buying to the neglect of selling at a proper profit. Said he: "Are you as careful to see that you get that last ½ cent on the sale of Nails as you are to get it when you buy? For instance, nearly all of you have Wire and Nails bought to-day at prices that show two advances. Those advances belong to you, and not to your customers. If the market had gone the other way you would simply be holding the bag. The reason that you throw away your profits when the maket advances is because you are afraid the other fellow will do it, and one of the greatest advantages of this association is that it helps to stiffen up the backs of members so that they will adhere to legitimate prices, and secure legitimate profits." On the subject of profits, the veteran speaker warned his hearers that they should allow liberally for contingencies in addition to a mere living percentage profit over cost price.

On the subject of catalogue house competition he said that there was not a Hardware jobber in America to-day, that would knowingly sell to retail catalogue houses, but that the retailer had, after all the most important work to do—work that he alone could do—the conversion of the farmer and the consuming public generally to the idea that their own best interests lay in patronizing their home merchants. The situation was bad enough, he said, with two great catalogue house corporations to compete against; what would it be if there were 20? He explained how the Joint Catalogue Committee had been able to bring the manufacturers into line only because its members knew and could declare that the retailers, through their State organizations, were squarely back of them. The latest move of the catalogue houses was to try to convince the consumer that he was being robbed in order to pay traveling salesmen their salaries and expenses, and that traveling salesmen were an unnecessary expense. While it was entirely possible for the jobbers to adopt the catalogue system for selling to the retailers if they wished it, instead of sending out traveling men, he gave many reasons why the present method was to the advantage of the dealer.

F. H. Young's Paper.

F. H. Young, general sales agent of the Hackett-Walther-Gates Hardware Company, St. Paul, read a paper on traveling salesmen, of which the following is a condensation:

It is no accident or series of accidents that places a man in the class of men who are spoken of as successful salesmen. At the age of 16 or 18 years a young man makes his choice of the business he wishes to follow, and secures a position in a Hardware jobbing house, in which his first three or four years' duties will consist of laying out orders. If he is punctual, his records show it; if he is rapid, another record shows that; if he is accurate or the reverse, that, too, is shown. At the end of four years he has either made himself a candidate for promotion, or has shown that he is not fitted for that development. After that he has still from three to five years' training to undergo. After a time he is permitted to wait on the trade, and, by and by, a salesman is needed, and if he is selected he has reason to be proud, for this is a guarantee that he has earned his employer's respect. But he has still a post graduate course to take. He who would survive must be made of steel, must have a physique which will thrive on exposure and hardship, and must

have a disposition which would enable him to be cheerful under all circumstances, whether good or bad. He must be able to bear bitter disappointments without complaint. He must resist temptations to do things which would incapacitate him for performing his work in the best possible manner—temptations not hard to resist when surrounded by the influence of the family and home, but which become very real to a young man when removed from those influences. If he avoids all these dangers, maintains a high average of effort, and practices the strictest honesty in all his dealings, he will within a few years be known as a successful salesman.

From the time he first makes his appearance he is worthy of your regard, and if he stands the pace for a time he deserves your respect. He is a picked man with qualifications far above the average. Let us give him his just dues.

WHILE THE LIFE OF A SALESMAN

has its disadvantages, it also has its advantages. He knows that his position is due to his merit and ability, and this gives him a feeling of confidence in himself that cannot prove otherwise than comfortable. He lives a broad existence, and meets people from every walk in life,

F. W. LUCAS.

and soon learns to believe in the brotherhood of man and to appreciate the sincerity of others, no matter how much their views may differ from his own. Such a man makes friends, and he who has many friends is happy.

The traveling man always has the interests of his customers at heart. He has worked hard to establish their confidence in him, and he does not intend to permit this confidence to be shaken. The dealer may not appreciate this, but it comes to our notice at the office daily, when we hear our men make such remarks as these: "Yes, I did sell him small quantities. I suppose I might have made them larger, but John has used me right, and I didn't want to send him more than I knew he needed." Or: "I did not want to press the sale of (referring to some new specialty we had put in) where I was this week. The towns are small and they would not be able to sell such an article as that."

Sometimes we, his employers, wonder if he ever thinks of our needs, but we generally conclude that his position is right; that we do not want to sell the trade what they do not need. But I want to say that we do want to sell them all the goods we can that they do need, and we confess it worries us sometimes when our man gets an order on one trip for ¼ dozen each, say of some Agricultural Wrenches, and we subsequently learn when he goes around next time that some smooth specialty man—all honor to his ability—has loaded this customer up with 6 or 8 dozen of each size of the same thing, and at the same price—a quantity our man would have thought too large for his customer's needs, and hence would not have tried to sell him.

Other Addresses.

C. H. Conner of the Fuller-Warren Company was called for, and he briefly explained that the Stove manufacturers had done more to protect the interests of the retail dealers against unfair catalogue house competition than they were aware of. He deplored the fact that too many small dealers quoted prices unnecessarily low; that they did not keep pace with the advances made by manufacturers, and continued to demoralize trade in their own localities by offering Stoves bought on a lower basis at a profit too meager even above that low basis.

W. J. Brown, a veteran traveling salesman for Deere & Webber, related some interesting experiences in connection with the sale of Buggies and other vehicles to dealers, and emphasized the fact that unless the dealer himself were an expert in all the materials and workmanship which enter into the manufacture of a vehicle, he would better confine his purchases to houses of known standing and to put his trust in the honesty and honor of the traveling salesmen of these houses.

Thomas Duffy, a Stove salesman, commended to the dealers the plan of selling Stoves on installments, acknowledging, however, that he was not entirely unselfish in such advice, as he observed that such of his customers as adopted that plan bought more Stoves than they did before.

Letter from President Bogardus.

President Bogardus of the National Association was prevented from attending the convention by illness in his family. He therefore sent an address, which was read by Mr. Davis. The address was a most interesting one, and touched on the relations of the retailer, jobber and manufacturer, and the necessity for the co-operation of the three classes. The benefits to retail merchants of membership in their State associations were also brought out as well as the desirability of enrolling in the association every legitimate Hardware merchant, so that a united front may be presented to the evils which were threatening the trade. In concluding his letter, Mr. Bogardus said: "The time for action has come. With the cordial support of the jobbers and the good will of the manufacturers we stand in our own light if we fail to grasp the situation. It is up to the retail dealers to seize the opportunity and win a lasting victory over our common enemy."

The Press.

R. R. Shuman of *The Iron Age* addressed the convention, telling of some interesting things that he had heard and seen at conventions in other States.

E. L. Millar, proprietor of the Duluth *Trade News*, delivered a most forceful and eloquent address. It was Mr. Millar's influence, largely, which had resulted in bringing the convention to Duluth, as his address at the convention last year at St. Paul carried everything before it, and, now that he had the convention at his home city, he gave it innumerable reasons for being glad of its choice and for having patriotic pride in both the city of Duluth and in the State at large. Minnesota, he said, had enjoyed the honor of having the largest per capita consumption of Hardware of any State in the Union, and he explained the reason for this in that while some States were largely agricultural, largely industrial, or largely maritime or mining, Minnesota was in a position where its sources of wealth were divided between all these and more. It was great in agriculture, but it was great also in its mineral resources, in its timber and lumber industries, in its fishing interests, and was a great resort for sportsmen and pleasure and health seekers from all over the United States. These widely diversified interests brought trade to the Hardwareman. The speaker then gave some startling figures as to the resources of Minnesota. Minnesota, the "bread and butter State," he said, produced annually 70,000,000 bushels of wheat and 70,000,000 pounds of butter, a pound of butter for every bushel of wheat; it milled and shipped annually 25,000,000 barrels of flour; produced and shipped 2,000,000,000 feet of lumber; shipped last year 12,000,000 tons of iron ore, and would ship 17,000,000 tons in 1905, or about one-fifth of the world's supply.

Election of Officers.

The following officers were chosen for the ensuing year:

PRESIDENT, A. T. Stebbins, Rochester, re-elected.
VICE-PRESIDENT, George M. Evenson, St. Peter, re-elected.
EXECUTIVE COMMITTEE: Three-year term, W. L. Tomlinson, Le Sueur; C. F. Ladner, St. Cloud; J. F. McGuire, St. Paul. Two-year term, F. W. Lucas, Litchfield.

The Banquet.

The association was tendered a banquet at the Spaulding Hotel by the jobbers of the State of Minnesota, the arrangements being in the hands of a committee consisting of E. A. Moye, George E. Wells, H. D. Final and B. W. How. Covers were laid for 350 people in the large dining hall of the hotel, the speakers' table being occupied by the jobbers and by men of local prominence, who contributed their efforts toward making the affair the brilliant success that it proved to be. E. L. Millar was toastmaster, and he introduced the speakers happily. A. T. Stebbins, the president of the association, responded to the first toast, and voiced the thanks and appreciation of the members of the association for the cordial hospitality with which their stay in Duluth had been accompanied.

Jesse Gregg of Nicols, Dean & Gregg, was asked to respond to the toast "The Ladies," despite the fact no ladies were present. Mr. Gregg delivered an eloquent tribute to the pioneer woman, in which he gave credit for the growth of the pioneer State of Minnesota to the bravery and zeal and self sacrifice of the pioneer mothers of the State.

J. Frank King gave an address on commercialism, embellished with anecdotes and character sketches.

W. E. Davis, editor of the *Hardware and Trade News* of Minneapolis, delivered a finished address on "Opportunity," in which he exalted the moral stamina of the man who wins.

Judge Page Morris delivered an address on "Character in Business." He contrasted the business of the Hardwareman, who asks only for a fair field and no favor to sell goods of known worth at a legitimate profit, with the class of financiers which deceives investors into buying something of unknown worth at many times its actual value and later forcing them to sell the same unknown quantities back at a fraction of their cost.

W. S. McCormick, City Comptroller, discharged toward the audience a veritable Gatling gun fire of good stories.

J. E. O'Brien of Crookston related the story of the birth and early struggles of the Minnesota State Association.

Visit to Zenith Furnace.

Friday morning the members of the association were taken to the new Zenith blast furnace at West Duluth. Here they saw a heat being poured from the blast furnace into the pigging bed, a sight which deeply impressed them. They were also shown the operation of the by-product coke ovens, including the pushing and quenching of several ovens, and were taken through the refining and reducing plant, where Benjamin I. Davis, the superintendent of construction, explained the means by which tar and ammonia were extracted from the gas and reduced to commercial form.

A number of the members of the association also made a tour of the plant of the Union Match Company.

Friday's Executive Sessions.

On returning from the trip to the Zenith furnaces the members assembled in their hall for an executive session. President Bogardus, who was to have delivered an address, was represented by a confidential communication devoted largely to a discussion of the catalogue house question, which, while it showed that there were still many battles to be fought, gave much encouragement because of the great work already accomplished.

Fred. Mason, secretary of the State Grocers' Association, delivered an address, in which he told of the efforts of the grocers of the State to secure needed legislation and to combat the competition of peddlers. Railroad rates and State taxes were also discussed.

F. E. Muzzy of the J. Stevens Arms & Tool Company, Chicopee Falls, Mass., delivered an address, reciting the history of the determined contest which his company had waged, with the result that mail order houses had at last been brought to the point where they quoted retail prices on the Stevens goods that still left a legitimate margin of profit for the retail dealer. His address also contained a very straight talk about the duties and responsibilities of the dealers themselves.

The last session of the association convened at about 2 p.m. and, like the preceding one, it was executive. The Auditing Committee of the Hardware Mutual Fire Insurance Company, consisting of L. E. Wakeman, St. Cloud; T. A. Revord, Austin, and Charles Juni, Jordan, reported the books of the officers of the association as being in satisfactory shape.

Next Meeting at Minneapolis.

It was decided that the next meeting of the convention should be held at Minneapolis, but that the decision as to the date and the selection of headquarters be left to the Executive Committee.

Delegates to the National Convention.

The following delegates were selected to represent the Minnesota State Association at the national convention, to be held at Minneapolis: A. T. Stebbins, Rochester; C. F. Ladner, St. Cloud; James E. O'Brien, Crookston; J. F. McGuire, St. Paul; C. H. Casey, Jordan; Leon C. Warner, Minneapolis; M. S. Mathews, Minneapolis.

Exhibits.

The distance from manufacturing centres to Duluth and the fact that a relatively smaller attendance was expected at the Minnesota convention is probably responsible for the fact that less than the usual number of exhibits were in evidence at the headquarters in the Spaulding Hotel. The Stove manufacturers, however, were out in full force and their salesmen reported at the close of the convention that actual business booked had been highly satisfactory. The following is a brief alphabetical list of exhibitors:

AMERICAN STEEL & WIRE COMPANY, Chicago, A. L. Bates and E. H. Derby.

E. C. ATKINS & Co., Indianapolis, Ind., R. B. Nixon, P. L. Edwards and T. F. Barbour; exhibited complete line of Saws. Aluminum Comb souvenir in form of Saw.

ART STOVE COMPANY, Detroit and Chicago, exhibited Laurel Stoves and Ranges. W. H. Kirk in charge.

BAXTER STOVE COMPANY, Mansfield, Ohio, E. L. Stelwaggen and M. F. Stelwaggen.

BERGER MFG. COMPANY, Canton, Ohio, represented by Walter Voight, Chicago; samples of classic ceilings and other art metal work.

BLACK & GERMER, Erie, Pa., E. B. Waterman and Thomas J. Duffy, Jr.; display of Radiant Home Stoves and Ranges.

ESTATE OF P. D. BECKWITH, Dowagiac, Mich., John A. Howard and C. A. Homrig; exhibit of Round Oak Stoves, Ranges and Heaters.

BUCK'S STOVE & RANGE COMPANY, St. Louis, Mo., was represented by C. S. Howard.

GEORGE M. CLARK, DIVISION AMERICAN STOVE COMPANY, Chicago, T. M. Gillfillan in charge, showed samples of Jewel Gas and Gasoline Stoves and Heaters.

CHARTER OAK STOVE & RANGE COMPANY, St. Louis, Mo., was represented by J. R. Barse; no exhibit.

COLE MFG. COMPANY, Chicago, was represented by H. L. Bangs and O. C. Harrison in display of Coleized Steel Range and Cole Hot Blast Stoves and Heaters.

CRIBBEN & SEXTON, Chicago, were represented by C. H. Cook, the Minneapolis manager, and J. H. Roelker; showed line of Universal Base Burners and Ranges.

DETROIT STOVE WORKS, Detroit, Mich., C. F. Daniels and L. E. Swane.

DIAMOND SPIRAL MFG. COMPANY, Tinley Park, Ill., John N. Rauhoff in charge, demonstrated Washing Machines.

DUNLAP MFG. COMPANY, Dunlap, Iowa, represented by C. A. Overton, exhibited Overton Adjustable Stove Pipe and other specialties.

KELLEY-HOW-THOMSON COMPANY, Hardware jobbers, Duluth, Minn., had a large exhibit of Sporting Goods, Cutlery, Builders' Hardware, Hay Carriers and General Hardware. Among other representatives in the exhibit room were W. M. Ferguson, B. O. Seymour, C. Q. Roemer, L. T. Ware, W. N. Hart and Mr. Law, the inventor of the Law Hay Carrier.

HIBBARD, SPENCER, BARTLETT & Co, Chicago, represented by C. W. Miller, W. J. Moorehead, C. C. Clement, Mason Booth, G. Dudley, Jr., J. C. Vincent, John E. Nolan, E. R. Garvey, E. M. Gray, Frank R. Durfee, O. P. Shepardson, H. K. Tompkins, E. W. Eisenhart, Ray Weimerskirch, E. F. Enkling and C. S. Howard.

MALLEABLE STEEL RANGE MFG. COMPANY, South Bend, Ind., represented by C. D. Butler and H. E. Cole.

MALLEABLE IRON RANGE COMPANY, Beaver Dam, Wis., exhibit in charge of Silas McClure.

MINNESOTA STOVE COMPANY, Shakopee, Minn., represented by G. A. Nye and E. O. Campbell.

MICHIGAN STOVE COMPANY, Detroit, Mich., represented by A. S. Dean and R. J. Ackerman; line of Garland Stoves and Ranges.

L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis., Henry A. Klinsman; full sized model Mueller Furnace.

C. A. PECK HARDWARE COMPANY, Berlin, Wis., samples of Nail Keg and Barb Wire Truck and Rural Mail Box, shown by C. A. Overton.

RATHBONE, SARD & CO., Aurora, Ill., was represented by A. C. Anderson in an attractive exhibit of Acorn Stoves and Ranges.

RINGEN DIVISION, AMERICAN STOVE COMPANY, St. Louis, Mo., represented by L. A. Buck and S. M. Shaffer; Quick Meal Stoves, Ranges and Heaters.

STRAYER & NESBIT, Minneapolis, exhibited Estate and Home Pride Stoves and Ranges.

ST. PAUL ROOFING, CORNICE & ORNAMENT COMPANY, St. Paul, Minn., was represented by G. W. Howard.

STOWELL MFG. & FOUNDRY COMPANY, South Milwaukee, Wis., represented by John A. Dalton, showed Boyd Hay Carriers, Hanson Patent Vise, Wilbern Hanger and Side Wall Registers.

VOSS BROS. MFG. COMPANY, Davenport, Iowa, H. C. White in charge; Ocean Wave, High Speed and Eagle Washers.

WHITE STOVE COMPANY, Quincy, Ill., was represented by G. M. Gates.

WHITE LILY WASHER COMPANY, Davenport, Iowa, represented by Theodore Roesche.

J. WISS & SONS COMPANY, Newark, N. J., J. H. Edmiston, exhibited Pruning Shears.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

WM. CONNORS PAINT MFG. COMPANY, Troy, N. Y.: Circular card relating to the advantages of the company's American Seal White Lead Putty.

HAMMACHER, SCHLEMMER & CO., Fourth avenue and Thirteenth street, New York: New Hollow Set Screws are illustrated and described in a circular.

MORRILL M. HOUGH, 105-107 Chambers street, New York: Pamphlet devoted to Morrill Hack Saw Blades for hand frames and power machines.

J. A. HARPS MFG. COMPANY, Greenfield, Ohio: Pamphlet relating to Never Fail Oil or Gasoline Cans.

LANE BROTHERS COMPANY, Poughkeepsie, N. Y.: Illustrated catalogue and price-list No. 23 devoted to Door Hangers and Rail, Fire Door Fixtures, Ball Bearing Store Ladder, Automatic Lock Tackle Blocks, Steel Carriage Jacks, Measuring Faucets, Coffee, Spice, Corn, Wheat, Drug Mills, Root Cutter, Joist and Timber Hanger, &c.

TOWER MFG. COMPANY, Madison, Ind.: Illustrated catalogue and price-list devoted to Tacks, Nails, Staples, Rivets, Burrs, &c.

BUTLER BROTHERS, 495-497 Broadway, New York: Spring issue of "Our Drummer," a 350-page illustrated catalogue of goods they carry in stock, sold to dealers only, containing almost everything carried by modern stores in the way of Hardware, House Furnishing Goods, Cutlery, Notions, Crockery, Glassware, &c.

HENRY N. CLARK COMPANY, 56-58 Union street, Boston, Mass.: Illustrated printed matter of five lines of Refrigerators handled by the company.

THE NATIONAL IRON & WIRE COMPANY, Cleveland, Ohio: Catalogue illustrating the National Steel Joist Hanger, Steel Post Cap, Fire Escapes, Stair Work, Steel Lawn Seats, Sidewalk Doors, Gratings, Structural, Ornamental and Builders' Iron Work.

THE SILL PNEUMATIC HORSE COLLAR COMPANY, 313-315 East Front street, Bloomington, Ill.: Pamphlet illustrating and describing a Metal Collar having a face of rubber tube covered with water proof canvas, which in turn is covered with leather.

AUSTRALIAN NOTES.

FROM A SPECIAL CORRESPONDENT.

MELBOURNE, January 11, 1905.

WE are now at the commencement of 1905 and indications for the coming year point to an upward tendency. At the same time there is nothing whatever in the commercial atmosphere to warrant any belief in the possibilities of 1905 being a year of actual progression. Labor troubles and State interference under Factories acts are a big handicap on progress. The iron trade on the manufacturing side has perhaps never been quieter than at the present moment. Tariff tinkering is still going on and a new tariff commission has been appointed. The most payable business in Australia is that of the professional politician. They number far too many to the square mile, and when we can reduce the number of our 14 Parliaments and their many hundreds of members by about 90 per cent. we may hope for some safety in the commercial world. As previously forecast, there is very little doubt that the Federal tariff will be considerably increased in the near future. Meanwhile perhaps the only lines showing any activity are Farm Implements and Machinery, Fencing Materials and Wire Netting.

Robinson Brothers & Co., one of the leading engineering shops in Melbourne, have recently suffered several thousand pounds' worth of damage through fire which partly destroyed their iron foundry.

G. P. Harris, Scarfe & Co., the well-known Adelaide firm, have sustained severe loss through the destruction by fire of their West Australian house. Theirs was a general Hardware trade and the loss is estimated at about £50,000, partly covered by insurance.

Fly Wire Screens for windows and doors have been judged dutiable under the Commonwealth at 20 per cent.; Nickel Plated Reflectors for Photo Lamps, 15 per cent; India Rubber Valves for Pumps, 12½ per cent., and India Rubber Gaskets for Boilers, 12½ per cent.

English travelers are coming out in increasing numbers, although we have had comparatively few new American commercials lately here.

MISCELLANEOUS NOTES.

Keystone Brand of Galvanized Nails.

Keystone Nail Company, Sixteenth street and Washington avenue, Philadelphia, Pa., is sending to the trade an illustrated circular card, with a detachable private mailing card, calling attention to its Keystone brand of nails, galvanized by hot metal process with pure spelter (zinc). A miniature keg of nails is also being mailed with the card.

Baby Vise and Anvil.

Eagle Anvil Works, Trenton, N. J., is manufacturing two articles especially adapted to use in making automobile repairs on the road and in the garage. These are a small vise, designated as No. 1 by the manufacturer, and a correspondingly small anvil, also designated No. 1. The vise is the company's regular pattern Fisher double screw parallel leg vise, with jaws 2 inches wide, opening 2¾ inches, and weighing 4½ pounds. The anvil is a miniature Fisher patent Eagle anvil, weighing about 8 pounds.

Vitricene Table Cutlery.

Goodell Company, Antrim, N. H., New York office 10 Warren street, is putting on the market Vitricene table cutlery, as illustrated herewith. The handles used in this line of cutlery are of a high grade of glass made expressly for this purpose and exceedingly tough. They are put through a process in the company's factory which renders them so strong that with reasonable care they will last indefinitely. The handles are guaranteed not

to shrink away from ferrule, not to fade or change color, to have no cement about them and to be absolutely proof against injury due to changes in temperature. The com-

Vitricene Table Cutlery.

pany remarks that this line of cutlery is made for people who appreciate table ware which is not only beautiful when it is new, but long retains its beauty.

Carpenter's Shoulder Tool Chest.

C. E. Jennings & Co., 42 Murray street, New York, have supplemented their lines of tool chests and tool cabinets for numerous purposes, from the purely amateur for boys, priced by the dozen, to the elaborate styles designed for professionals and expert adult amateurs, including among the former carpenters, machinists, jewelers, electricians, &c., either fitted with tools or empty, to be fitted out as the mechanic chooses. One of the newer styles brought out within a few weeks is a carpenter's shoulder tool chest, No. 30, here shown. It is made of chestnut and finely finished in varnish, natural color. The corners are dovetailed and there are two shallow bottom drawers, entering from each end and automatically locked by a device in center of the back which secures each drawer by closing the lid; the drawers each measuring 15¾ x 8½ x 1⅝ inside. There is a flush

Carpenter's Shoulder Tool Chest.

pull on each end and two brass trunk snap clasps to hold the lid, with brass chest handle on each end of chest. The space above the drawers is 33 x 9½ x 5¾ inches inner dimensions, and will accommodate a 28-inch rip saw, each chest having places in the lid, not seen in the cut, for securely holding several saws. There is a strong spring lock and the trimmings are brass throughout.

Combination Shelf and Towel Rack.

The accompanying illustrations represent a combination shelf and towel rack for use in the kitchen, bathroom, laundry, &c. The rack is shown hanging under the shelf in Fig. 1, while Fig. 2 illustrates it in working position. The rack can be set at any angle. The device

Fig. 1.

Fig. 2.

Combination Shelf and Towel Rack.

is made of beechwood, having ornamental brackets, with beaded ball ornaments. The shelf is 4 x 26 inches in size, and there are small holes an inch apart in the shelf back for nailing or screwing to the wall. The object in having the rack hang is to have it out of the way when not in use. It is put on the market by the A. J. Phillips Company, Fenton, Mich.

New Jumbo 1905 Nail Puller.

Bridgeport Hardware Mfg. Company, Bridgeport, Conn., is putting on the market the nail puller shown

New Jumbo 1905 Nail Puller.

herewith. The shank and claw are forged from the finest grade tool steel, which the maker says is especially adapted to the purpose. The hardening and tempering are guaranteed by the manufacturer. Attention is called to the hand guard on the shank as a desirable feature. The handle is finished in jet black enamel, and the jaw and shank are highly polished. It is made in one size, 18 inch, and packed three dozen in a case.

Carpenter's New Full Mounted Die Stocks.

In Fig. 1 are illustrated the full mounted round die sets manufactured by the J. M. Carpenter Tap & Die Company, Pawtucket, R. I. Each die is in a separate stock, of good proportion to the cutting diameter of the

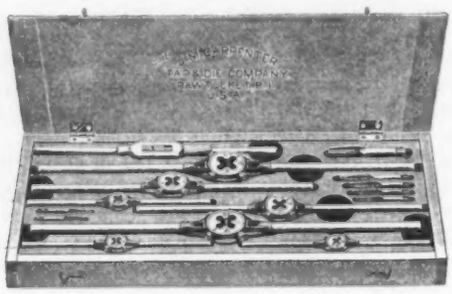


Fig. 1.—Carpenter's New Full Mounted Die Stocks.

die, and each stock has a guide of proper size to lead the rod, being threaded to the die in perfect alignment. The dies are so made as to answer their purpose in a screw machine as well as to be used in a hand stock, and no

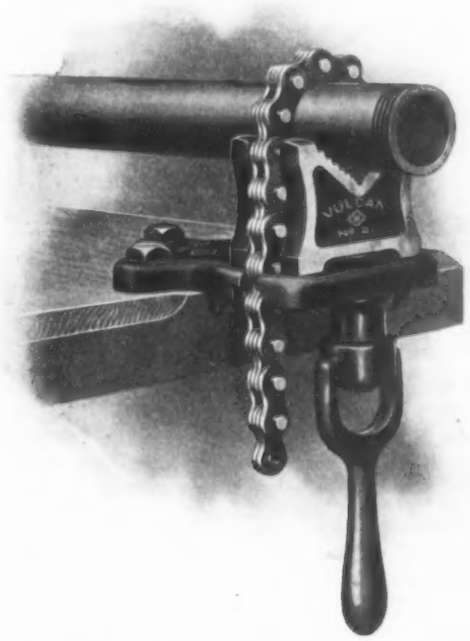
collets are used on the dies, as the guide on the stocks makes the use of collets unnecessary. The stocks are referred to as neat, light and strong, making an attractive set. One of the tap wrenches shown in Fig 2 is fur-

Fig. 2.—Nichols' Patent Tap Wrench.

nished with each set, making it complete. The sets are put up in standard V threads, rough iron size V threads and United States standard threads.

Vulcan Chain Pipe Vise.

J. H. Williams & Co., 150 Hamilton avenue, Brooklyn, N. Y., have just begun the manufacture of the new Vulcan chain pipe vise, here illustrated, which has many improved patented features. It will rigidly grip pipe or tubing from ⅛ to 2½ inch sizes, inclusive, without risk of crushing the pipe, the chain, which is of great strength, hugging the pipe or other material half way round. The parts are fine examples of drop forging from wrought steel. If the teeth in the lower jaws become dulled by



Vulcan Chain Pipe Vise and Method of Using.

constant use they can be quickly and easily renewed by filing. All parts are interchangeable and fully warranted. The vise base has three 11-16 inch holes for bolting it to the work bench. If needed away from the shop on a job it can be conveniently carried in a tool kit, as its extreme dimensions folded are but 6 x 8 x 8 inches and its weight is but 10 pounds. In construction and finish this tool is of the same high grade throughout that distinguishes the firm's entire product. At the right is a quick pitch screw ⅞ inch in diameter with square, deep threads finely cut, to which is riveted a strong link chain with projecting pinions ¼ x ⅞ inch as far as usable. The swinging handle, or wrench, is 6½ inches long over all, swelling to 1 inch in diameter at the widest part of the grip. In operation the chain is thrown over the pipe, and by means of the projecting pivots is caught securely in the chain pockets, when a turn of the handle draws downward the threaded bolt, thus instantly and evenly gripping the tube. This feature of the vise readily accommodates itself to any diameter through the use of a hardened and tempered ball-and-socket-like joint on the under side of the vise base, thus providing a novel, reliable and speedy adjustment. Both jaws are ⅝ inch thick and saw tempered. The manufacturers draw attention to the following advantages: A ¼ inch of the chain drop, or a quarter turn of the screw, with but slight exercise of strength is all that is required to hold securely any article within limits. It is unbreakable, compact, quick in action, of positive grip, a great time saver and so simple as to give no trouble.

Westcott's Patent Spur Geared Scroll Combination Lathe Chuck.

Westcott Chuck Company, Oneida, N. Y., is offering the chuck shown herewith. The power applied to produce the universal movements of the jaws is transmitted by a strong spur pinion, which engages with a spur gear cut on the edge of the steel scroll. The pinion is operated by a drop forged open end wrench, which enters through an opening in the edge of the chuck and engages with the hexagon pinion shaft, but it may also be operated

Fig. 1.—Westcott's Patent Spur Geared Scroll Combination Lathe Chuck.

from the face of the chuck by a socket wrench, which fits the square end of the pinion shaft. In all other respects this chuck is the same as the company's scroll combination chuck. The scroll may be rapidly manipulated by a lever engaging directly with it at the back, as in the old chuck, and increased gripping power is then gained by applying the open end wrench to the spur pinion. An exceedingly powerful grip is thus attained. The increased grip is due not only to the fact that a spur gear

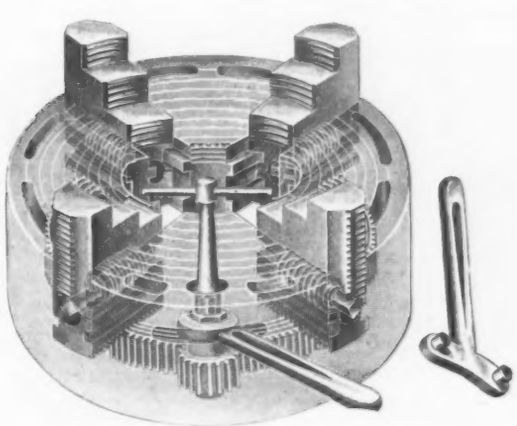


Fig. 2.—Showing Spur Gear of Chuck.

is used, but also to the use of an open end wrench to which, it is explained, a man may apply as much power as he pleases without danger of breakage. The mechanism by which the universal movement of the jaws is produced may be operated from the face edge of the chuck as well as from the rear. The chuck does not require any shifting in and out of gear, but is always ready to be operated either independently or universally at will. The jaws are reversible.

Dorn's Patent Revolving Miter Box.

The accompanying cuts relate to a revolving miter box put on the market by Braunsdorf-Mueller Company, Elizabeth, N. J., Warner & Haviland, 17 Warren street, New York representatives. The backs may be placed and locked in exact line with or independent of each other at any angle around the central axis of the box. Means are provided for holding the saw in a raised position, leaving both hands free to make adjustments, &c. The revolving table admits of the use of the box by two men on the same bench, as it can be used from either side. The saw can be put in or taken out without the lifting of a screw or

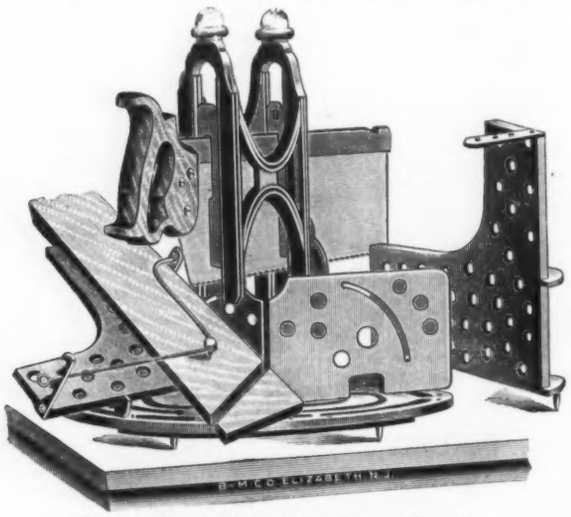


Fig. 1.—Dorn's Patent Revolving Miter Box.

catch. It is released by simply tilting the handle end upward while it is being withdrawn from the box. Three pointed feet are provided, which prevent the box sliding on the bench or scaffold, so that screws are unnecessary to hold it. The overhanging frame leaves the table unobstructed, so that a board 14 inches and wider can be cut, as well as a narrow one, and a back saw 4 inches wide will answer every purpose, as the cut is made with the board lying flat instead of standing on edge. The table is provided with adjustable stops and rests to hold work securely against the backs. Provision is made for working long, unwieldy moldings. The table can be turned to clear obstructions on the bench, &c. In Fig. 2 the backs are shown swung back for cornice moldings, brackets, columns, buttresses, newels, door and window casings, &c. The cut also shows the adjustable stop

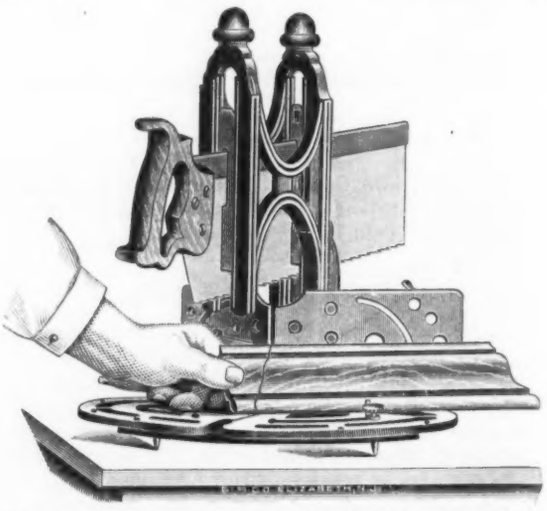


Fig. 2.—Position of Backs for Cutting Cornice Moldings, &c.

holding the molding securely against the back. Either or both ends may be cut without changing the backs. The backs may also be adjusted for sawing panel moldings, picture frames, and paneling, circular work, &c. The overhanging frame is shown detached in Fig. 3, so that

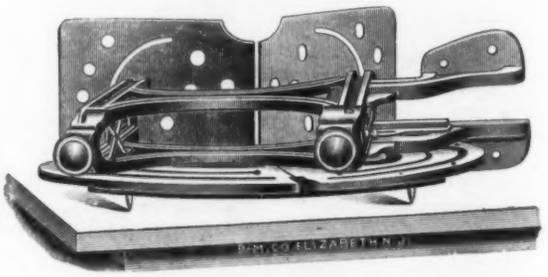


Fig. 3.—Miter Box Knocked Down for Tool Chest.

the box can be put into a tool chest. There are no screws to remove, and it takes but two seconds, it is explained, to release the two clamps which lock the frame to the table, and the time required to knock the box down and place it in a chest is less than a minute.

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.—

	₱ lb
Lead, English white, in Oil..	9½@ 9¾
Lead, American white, in Oil:	
Lots of 500 lb or over.. ..	@ 6½
Lots less than 500 lb.. ..	@ 7
In Barrels.. ..	@ 6
Lead, White, in oil, 25 lb tin pails, add to keg price.. ..	@ ½
Lead, White, in oil, 12½ lb tin pails, add to keg price.. ..	@ 1
Lead, White, in oil, 1 to 5 lb assted tins, add to keg price ..	@ 1½
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.	
	₱ lb
Lead, White, Dry in bbls.. ..	@ 6
Zinc, American, dry..	**4⅝@ 4⅝**
Zinc, French:	
Paris, Red Seal, dry..	8½
Paris, Green Seal, dry..	9⅜
Antwerp, Red Seal, dry..	7½
Antwerp, Green Seal, dry..	8¾
Zinc, V. M. French, in Poppy Oil: Green Seal:	
Lots of 1 ton and over..	11⅞@12⅜
Lots of less than 1 ton..	12¼@12⅝
Zinc, V. M. French, in Poppy Oil: Red Seal:	
Lots of 1 ton and over..	**10⅝@11⅛**
Lots of less than 1 ton..	10⅞@11⅜

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	₱ lb
Black, Carbon..	5 @10
Black, Drop, Amer..	4 @ 6
Black, Drop, Eng..	5 @15
Black, Ivory..	16 @20
Lamp, Com..	4½@ 8
Blue, Celestial..	4 @ 6
Blue, Chinese..	29 @32
Blue, Prussian..	27 @30
Blue, Ultramarine..	4½@15
Brown, Spanish..	½@ 1
Carmine, No. 40..	$3.55@4.00
Green, Chrome, ordinary..	3½@ 6
Green, Chrome, pure..	17 @25
Lead, Red, bbls., ⅓ bbls. and kegs:	
Lots 500 lb or over.. ..	@ 6½
Lots less than 500 lb.. ..	@ 7
Litharge, bbls., ⅓ bbls. and kegs:	
Lots 500 lb or over.. ..	@ 6½
Lots less than 500 lb.. ..	@ 7
Ocher, American..	₱ ton $8.50@16.00
Orcher, American Golden..	2½@ 3½
Orcher, French..	1¾@ 2¾
Orcher, Foreign Golden..	3 @ 4
Orange Mineral, English..	8¾@10½
Orange Mineral, French..	10½@11¾
Orange Mineral, German..	7¾@10
Orange Mineral, American..	8 @ 8¾
Red, Indian, English..	1½@ 8½
Red, Indian, American..	3 @ 3¾
Red, Turkey, English..	4 @10
Red, Tuscan, English..	7 @10
Red, Venetian, Amer..	₱ 100 lb $0.50@1.25
Red Venetian, English..	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered..	3 @ 9½
Sienna, Ital., Raw Powd..	3 @ 6½
Sienna, American, Raw..	1½@ 2
Sienna, American, Burnt and Powdered..	1½@ 2
Talc, French..	₱ ton $20.00@30.00
Talc, American..	₱ ton 16.00@25.00
Terra Alba, French..	₱ 100 lb 90 @1.00
Terra Alba, English..	₱ 100 lb 90 @1.00
Terra Alba, American, ₱ 100 lb., No. 1..	.60 @70
Terra Alba, American, ₱ 100 lb., No. 2..	.45 @50
Umber, T'key, Bnt. & Pow..	2½@ 3½
Umber, Turkey, Raw & Pow..	2½@ 3½
Umber, Burnt, Amer..	1½@ 2
Umber, Raw, Amer..	1½@ 2
Yellow, Chrome..	11 @14
Vermilion, American Lead..	10 @25
Vermilion, Quicksilver, bulk.. ..	@65
Vermilion, Quicksilver, bags.. ..	@66
Vermilion, English, Import..	75 @80
Vermilion, Chinese..	$0.90@1.00

Colors in Oil—

	₱ lb
Black, Lampblack..	12 @14
Blue, Chinese..	36 @46
Blue, Prussian..	32 @36
Blue, Ultramarine..	13 @16
Brown, Vandyke..	11 @14
Green, Chrome..	10 @15
Green, Paris.. ..	@24
Sienna, Raw..	12 @15
Sienna, Burnt..	12 @15
Umber, Raw..	11 @14
Umber, Burnt..	11 @14

Miscellaneous—

Barytes, White, Foreign..	₱ ton $17.50@19.00
Barytes, Amer. floated..	₱ ton 17.00@18.50
Barytes, Crude, No. 1..	₱ ton 10.00@11.00
Chalk, in bulk..	₱ ton 3.00@ 3.25
Chalk, in bbls..	₱ 100 lb .. @ .35
China Clay, English..	₱ ton 11.00@17.00
Cobalt, Oxide..	₱ 100 lb 2.50@ ....
Whiting, Common..	₱ 100 lb .45@ .48
Whiting, Gilders..	₱ 100 lb .56@ .57
Whiting, Ex. Gilders..	₱ 100 lb .58@ .60

Putty—

	₱ 100 lb
In bladders..	$1.65@1.70
In bulk..	1.05@1.15
In cans, 1 lb to 5 lb..	2.00@2.90
In cans, 12½ to 50 lb..	1.40@1.55

Spirits Turpentine — ₱ gal.

In Oil bbls..	53 @53½
In machine bbls..	53½@54

Glue—

	₱ lb
Cabinet..	11 @15
Common Bone..	6 @ 8
Extra White..	18 @24
Foot Stock, White..	11 @14
Foot Stock, Brown..	7 @10
German Hide..	12 @18
French..	10 @40
Irish..	13 @16
Low Grade..	8 @11
Medium White..	14 @17

Gum Shellac—

	₱ lb
Bleached Commercial..	33 @34
Bone Dried..	43 @44
Button..	26 @45
Diamond I..	53 @..
Fine Orange..	43 @45
A. C. Garnet..	36 @40
D. C..	@..
Octagon B..	50 @..
T. N..	35 @36
V. S. O..	53 @..

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, City, raw..	45 @46
Linseed, City, boiled..	47 @48
Linseed, State and West'n raw..	44 @45
Linseed, raw Calcutta seed..	@55
Lard, Prime, Winter..	56 @58
Lard, Extra No. 1..	48 @49
Lard, No. 2..	36 @38
Cotton-seed, Crude, f.o.b. mills..	16 @17
Cotton-seed, Summer Yellow, Prime..	24 @24½
Cotton-seed, Summer Yellow off grades..	24 @24½
Sperm, Crude..	60 @..
Sperm, Natural Spring..	@..
Sperm, Bleached Spring..	@..
Sperm, Natura' Winter..	62 @64
Sperm, Bleached Winter..	65 @67
Tallow, Prime..	48 @50
Whale, Crude..	@..
Whale, Natural Winter..	45 @..
Whale, Bleached Winter..	47 @..
Menhaden, Brown, Strained..	27 @28
Menhaden, Light, Strained..	28 @29
Menhaden, Bleached Winter..	30 @32
Menhaden, Ex-Bld. Winter..	32 @33
Menhaden, Southern..	19½@20
Cocoanut, Ceylon..	₱ lb 6¼@ 6¾
Cocoanut, Cochin..	₱ lb 7⅜@ 7⅝
Cod, Domestic, Prime..	36 @38
Cod, Newfoundland..	39 @41
Red Elaine..	31 @33
Red Saponified..	₱ lb 4¾@ 5
Olive, Italian, bbls..	54 @58
Neatsfoot, prime..	50 @51
Palm, prime Logos..	₱ lb 5⅛@ 5⅜

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test..	10½@11½
Black, 29 gravity, 15 cold test..	11½@12½
Black, Summer..	10½@11½
Cylinder, light filtered..	18 @19
Cylinder, dark filtered..	16 @17
Paraffine, 903-907 gravity..	12¼@13
Paraffine, 903 gravity..	11½@12
Paraffine, 883 gravity..	9¼@ 9½
Pariffine, Red..	11½@13

In small lots ½¢ advance.

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00 ..... 33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent 35%
Taplin's Perfection 35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils ..... ℔ lb 7¼@7¾¢
Hay Budden, Wrought ..... 9@9¼¢
Horseshoe brand, Wrought ..... 9@9¼¢
Trenton ..... ℔ lb 9@9¼¢

Imported—
Peter Wright & Sons ..... ℔ lb 10½¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00 ..... 15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Hull Bros. Co ..... 30&10%
Livingston Nail Co 33⅓%

Augers and Bits—
Com. Double Spur ..... 70&10%
Boring Mach. Augers ..... 70&10%
Car Bits, 12-in. twist ..... 50&10%
Jennings' Pattern ..... 70&10%
Ford's Auger and Car Bits ..... 40&5
Forstner Pat. Auger Bits 25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list ..25%
No. 30, R. Jennings' list ..... 40&7½%
Russell Jennings' ..... 25&10&2½%
L. Hommedieu Car Bits 15%
Mayhew's Countersink Bits 45%
Millers Falls ..... 50&5&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits ..... 40&10%
Pugh's Black 20%
Pugh's Jennings' Pattern 35%
Snell's Auger Bits 60%
Snell's Bell Hangers' Bits 60%
Snell's Car Bits, 12-in. twist ..... 60&10%
Wright's Jennings' Bits (R. Jennings' list) 50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26 ..... 50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18 ..... 50&10%
Ford's Clark's Pattern ..... 50&10&60%
C. E. Jennings & Co., Steer's Pat. ..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut ..... $3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz. $9.00@10 00
Ames ..... 25&10%
New Patent ..... 25&10%
Universal 20%
Wood's Universal 25%

Ship Augers and Bits—
Ford's 40%
C. E. Jennings & Co.:
L. Hommedieu's 15%
Watrous' ..... 35&5%
Ohio Tool Co.'s 40%
Snell's 40%

Awl Hafts— See *Hafts, Awl.*

Awls—
Brad Awls:
Handled ..... gro. $2.75@3.00
Unhdld., Shldered .. gro. 63¢@66¢
Unhandled, Patent .. gro. 66¢@70¢
Pry Awls:
Unhandled, Patent .. gro. 31@34¢
Unhdld, Shldered .. gro. 65@70¢
Scratch Awls:
Headled, Com .. gro. $3.50@4.00
Handled, Socket .. gro. $11.50@12.00
Rosewood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights, (up to 3½ lb.)
First Quality $6.50
Second Quality $6.00
NOTE.—*Heavier Weights add Extras as per regular schedule.*

Axle Grease — See *Grease, Axle*

Axles— *Iron or Steel*
Concord, Loose Collar ... 4¼@4¾¢
Concord, Solid Collar ... 4¾@5¼¢
No. 1 Common, Loose ... 5¼@5¾¢
No. 1½ Com., New Style 5¾@6¼¢
No. 2 Solid Collar ..... 6@6½¢
Nos. 7, 8, 11 and 12 .... 75@75&5%
Nos. 13 to 14 ..... 70&10@75&5%
Nos. 15 to 18 ..... 75&10@75&10&5%
Nos. 19 to 22 ..... 75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb. 4½@5¢
Common and Concord, turned, lb., 5½@6¢
Half Patent ..... lb. 8½@9¢

Bait— Fishing—
Hendryx:
A Bait 20%
B Bait 25%
Competitor Bait ..... 20&5%

Balances— Sash—
Caldwell new list 50%
Pulman ..... 50&10@60%

Spring—
Spring Balances ..... 60@60&5%
Chatillon's:
Light Spg. Balances ..... 40&10%
Straight Balances 40%
Circular Balances 50%
Large Dial 30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb .... per lb., 2¾@3¼¢

Towel
No. 10 Ideal, Nickel Plate .. ℔ gro. $8.50

Beams, Scale—
Scale Beams ..... 40&10@50%
Chattillon's No. 1 ..... 30%
Chattillon's No. 2 ..... 40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized .. ℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric ..... ℔ gro. $7.80
No. 2 Buffalo ..... ℔ gro. $9.00
No. 3 Perfection Dust ..... ℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned .... ℔ doz. $1.20
Holt, No. 1, Tinned ..... ℔ doz. $1.50
Holt, No. B, Japanned .... ℔ doz. $2.00
Holt, No. 2, Tinned ..... ℔ doz. $2.25
Lyon, No. 2, Japanned .... ℔ doz. $1.25
Lyon, No. 3, Japanned .... ℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover $6.00
No. 75 Improved Dover $6.50
No. 100 Improved Dover $7.00
No. 102 Improved Dover, Tin'd. $8.50
No. 150 Improved Dover, Hotel. $15.00
No. 152 Imp'd Dover, Hotel, T'd. $17.00
No. 200 Imp'd Dover Tumbler $8.50
No. 202 Imp'd Dover Tumbler, T'd. $9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo $7.00
Wonder (S. S. & Co.) ℔ gro. net. $6.00

Bellows—
Blacksmith, Standard List .. 60&10@70&10%

Blacksmiths'—
Inch .. 30 32 34 36 38 46
Each $3.25 3.50 4.00 4.50 5.00 5.75
Extra Length:
Each $3.75 4.25 4.75 5.25 6.00 7.00

Hand—
Inch ... 6 7 8 9 10
Doz ... $4.50 5.00 5.50 6.00 6.50

Molders—
Inch . 9 10 11 12 14
Doz . $8.00 9.00 10.50 12.50 14.50

Net Prices.

Bells— Cow—
Ordinary goods ... 75&5@75&10&5%
High grade ..... 70&10@70&10&5%
Jersey ..... 75&10%
Texas Star 50%

Door—
Abbe's Gong 45%
Burton Gong 50%
Home, R. & E. Mfg. Co.'s ..... 55&10%
Lever and Pull, Sargent's .... 60&10&10%
Trip Gong ..... 50&10@50&10&5%
Yankee Gong 55%

Hand—
Hand Bells, Polished, Brass .. 60&5@60&10&5%
White Metal 60%
Nickel Plated .... 50&10@50&10&5%
Swiss ..... 60@60&7½%
Cone's Globe Hand Bells ..... 35 @35%
Silver Chime ..... 33⅓@35%

Miscellaneous—
Farm Bells ..... lb. 2¼¢
Steel Alloy Church and School 50&10&5%@60&5%
American Tube & Stamping Co. Gongs 75%
Table Call Bells ..... 50@50&10%

Bolting— Leather—
Extra Hvy, Short Lap .. 60@60&5%
Regular Short Lap ... 65&10@70%
Standard ..... 70&5@70&10%
Light Standard ..... 70&10@75%
Cut Leather Lacing ..... 60&10%
Leather Lacing Sides, per sq. ft. 17½@18¢

Rubber—
Agricultural (Low Grade) .... 75@75&5%
Common Standard .... 70@70&10%
Standard ..... 65&70%
Extra ..... 60&65@60&10%
High Grade ..... 50&5@50&10%

Bench Stops— See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender 40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden ... 70&10@75&5%
Hartz St. Tackle Blocks ..... 50@50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves ..... 50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty. Mal. Iron .... 50&10%
Stowell's Self-Loading 60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c ... 30&10@40&10%

Boards, Wash— See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co 33⅓%

Bolts—

Carriage, Machine, &c.—
Common Carriage (cut thread): ⅝ x 6 and Smaller .... 75&2½%
Larger and longer 70%
Phila. Eagle $3.00 list May 2, '99 80&10%
Bolt Ends, list Feb. 14, '95. 70&5%
Machine, ⅜ x 4 and smaller 75&5%
Machine, larger and longer .. 70&7½%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch 3 4 5 6 8
Per doz. $0.30 .35 .45 .56 .75
Cast Iron Spring Foot, Jap'd:
Inch 6 8 10
Per doz $1.15 1.40 2.00
Cast Iron Chain, Flat, Japanned:
Inch 6 8 10
Per doz $0.95 1.25 1.55
Cast Iron Shutter, Japanned, Brass Knobs:
Inch 6 8 10
Per doz ..... $0.80 .90 1.20
Wrt Barrel Japd ..... 80@80&10%
Wrt " Bronzed .... 50@50&10%
Wrt. Spring ... 70&10@70&10&10%
Wrt. Shutter ..... 50&5@50&10&5%
Wrt. Square Neck ..... 75@75&10%
Wrt Square 66⅔ & 10@66⅔&10&10%
Ives' Patent Door 60%

Stove and Plow—
Plow ..... 70&10@70&10&5%
Stove ..... 82½&10@82½&10&5%

Tire—
Common 72½%
Norway Iron 80%
American Screw Company:
Norway Phila., list Oct. 16, '84 ... 80%
Eagle Phila., list Oct. 16, '84 .... 82½%
Bay State, list Dec. 28, '99 ..... 72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84 ... 80%
Eagle Phila., list Oct. 16, '84 .... 82½%
Echpse, list Dec. 28, '99 ..... 72½%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99 ..... 72½%
Norway Phila., list Oct., '84 ..... 80%
Upson Nut Co.:
Tire Bolts 72½%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch	*1¼*	*1½*	*1¾*	*2*
Per doz	*$4.80*	*5.60*	*6.40*	*8.00*
Inch			*2¼*	*2½*
Per doz			*$5.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each 25%

Boxes, Mitre—
C. E. Jennings & Co 30%
Langdon ..... 15&10%
Perfection ..... ℔ doz. $30.00
Schatz 40%
Stanley R. & L. Co.:
Nos. 240 to 460 ..... 30%
Nos. 50 and 60 ..... 35%

Braces—
Common Ball Bearing, American .. $1.25@1.30
Barber's ..... 50&10&10@60&10
Fray's Genuine Spofford's 60
Fray's No. 70 to 120, 81 to 123, 207 to 414 60
C. E. Jennings & Co ..... 50&5
Mayhew's Ratchet 60
Mayhew's Quick Action Hay Pat ... 50%
Millers Falls Drill Braces ..... 25&10
P., S. & W. Co., Peck's Pat. 60&10@65%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel .. 80&10@80&10&5%
Bradley's Wire Shelf:
Full cases ..... 80&10&10%
Broken cases ..... 80&10
Griffin's Pressed Steel 80
Griffin's Folding Brackets ..... 70&10
Stowell's Cast Shelf 75
Stowell's Sink 50
Western, W. G. Co., Wire ..... 60&10%

Bright Wire Goods— See *Wire and Wire Goods.*

Broilers—
Western, W. G. Co 80%
Wire Goods Co ..... 75@75&10%

Buckets, Galvanized—
Price per dozen.

	Quart	*12*	*14*
Water, Regular	*1.40*	*1.70*	*1.90*
Water, Heavy	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier ..... ℔ gro. $36.00

Bull Rings— See *Rings, Bull*

Butts— Brass—
Wrought, list Sept., '96 ..... 80%
Cast Brass, Tiebout's 50%

Cast Iron—
Fast Joint, Broad .... 4¾&10@50%
Fast Joint, Narrow ... 40&10@50%
Loose Joint ..... 70&10@75%
Loose Pin ..... 70&10@75%
Mayer's Hinges ..... 70@70&5
Parliament Butts ..... 70@70&5

Wrought Steel—
Table and Back Flaps ... 75%
Narrow and Broad 75%
Inside Blind 75%
Loose Pin 75%
Loose Pin, Jap'd ..... 70&10%
Loose Pin, Ball and Steeple Tip 85%
Japanned Ball Tip Butts ... 75&10%
Bronzed, Wrt., Nar. and Inside Blind Butts .... 55&10%

Ex., 10&10@10&10&5%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series 5%
1200 series 33⅓%
200, 300, 600 and 900 series .... 40&10%
Hendryx Bronze:
700, 800 series ..... 40&10%
Hendryx Enameled ..... 40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 4½@5¼¢
Sharp, 1 prong...per lb., 4½@4¾¢
Gautier, Blunt.....9@4¾¢
Gautier, Sharp.....4½@4¾¢
Perkins', Blunt Toe.....per lb 3.65¢
Perkins', Sharp Toe.....per lb 4.15¢

Can Openers—

See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball....$1.49
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
7.40	5.10	4.15	3.45	3.30	3.20	3.15
⅝	¾	⅞	1 to 1¼ inch.			
3.10	3.00	2.95	2.95 per 100 lb.			

German Coil.....60&10&10@70%

Halters and Ties—

Halter Chains...60&10@60&10&10%
German Pattern Halter Chains, list July 2½, '97.....60&10&10%
Cow Ties.....60@60&10%

Trace, Wagon, &c.—

Traces, Western Standard; 100 pr.
6½—6-3, Str'ght, with ring .$23.50
6½—6-2, Str'ght, with ring .$24.50
6½—8-2, Str'ght, with ring .$28.00
6½—10-2, Str'ght, with ring $32.00

NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.

Trace, Wagon and Fancy Chains.....60&5@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10@60&10&5%
Brass.....60&10@60&10&10%
Safety Chain.....75@75&10&5%
Gal. Pump Chain.....lb. 5@5¼¢
Covert Mfg. Co.:
Breast.....40&2%
Halter.....40&2%
Heel.....40&2%
Rein.....40&2%
Stallion.....40&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter....45@50&5%
Niagara Coil and Halter....45@50&5%
Niagara Cow Ties....45&5@50&10&5%
Niagara Wire Dog Chains..45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl. Jointed Chain.....50%

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 35@38¢
Carpenters' Red.....gro. 30@33¢
Carpenters' White....gro. 25@28¢
See also Crayons.

Checks, Door—

Bardsley's.....45%
Columbia.....50&10%
Eclipse.....60&10%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—

Socket Framing and Firmer

Standard List.....70&10@75&10%
Buck Bros.....30
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60
C. E. Jennings & Co. Socket Framing No. 15.....60
Ohio Tool Co.'s.....70
Swan's.....70
L. & I. J. White.....30@30&5%

Tanged—

Tanged Firmers....40&5@40&10%
Buck Bros.....30
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White, Tanged.....25&5%

Cold—

	lb.
Cold Chisels, good quality	.13@15¢
Cold Chisels, fair quality	.11@12¢
Cold Chisels, ordinary	... 9@10¢

Chucks—

Beach Pat., each $8.00.....35&5%
Pratt's Positive Drive.....25%
Empire.....25%
Blacksmiths'.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....45%
Drill Chuck, Skinner Pat., 0, 1, 2.35%
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 7, 8.....35%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P. S. & W. Co..50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..per doz. $4.05 net
Star Shank, All Steel..per doz. $3.24 net
W. & C. Shank, All Steel, per doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓&33⅓&10%
L. & I. J. White.....30%

Clippers—

Chicago Flexible Shaft Company:
'98 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....10.75 }
20th Century Horse, each, $5.00...20%
Lightning Belt.....$15.00 }
Chicago Belt.....$20.00 } 15%
Stewart's Patent Sheep, $12.75....20%

Finger Nail Clippers—

Smith & Hemenway Co. per doz. net $2.00

Clips, Axle—

Eagle, 5-16 and ⅜ in..75@75&10%
Norway, 5-16 and ⅜ in..60&10@70%

Cloth and Netting, Wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....70&10@75%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—

Metal Stamping Co.....40%

Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.

Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
A Eastern	75&5%	75%
B. Eastern	75&10%	75&5%
Central	75&5%	70&10&5%
Southern	70&7½%	70&2½%
S. Western	70&5%	70%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4		6	8
Iceland, ea.	$1.80	$2.10		$2.40	$3.00
Gal.	2	3	4	6	8
Galv. Lined, ea.	$1.85	$2.00	$2.25	$2.90	$3.90

25%

Gavl. Lined, side handles,

Gal.	2	3	4	6	8
Each.	$1.95	$2.15	$2.40	$3.30	$4.15..25%

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided White, Com.lb. 21@22½¢
Cable Laid Italian..... lb., A, 18¢; B, 16¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..11@17¢
Patent Russia.....lb...@15¢
Cable Laid Russia....lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted.lb. 12@13¢
Anniston Cordage Co.: Braided Cotton, Old Glory, Nos. 7 to 12....per lb 28 ¢
Anniston, Nos. 7 to 12....per lb 22 ¢
Old Colony, Nos. 7 to 12..per lb 22 ¢
Anniston Drab, Nos. 7 to 12..per lb 26 ¢
Pearl Braided, cotton, No. 6, per lb, 22½¢; No. 7, 21½¢; Nos. 8 to 12, 21¢
Eddystone Braided, Nos. 7, 8, 9 and 10.....per lb 24 ¢
Eddystone Braided Cotton, No. 6..per lb 25 ¢
Harmony Cable Laid Italian, Nos. 7 to 10.....per lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton.....per lb 40 ¢
Braided, Italian Hamp....per lb 40 ¢
Braided, Linen.....per lb 55 ¢
Braided, White Cotton or Spot....per lb 35 ¢
Massachusetts, White.....per lb 28 ¢
Massachusetts, Drab.....per lb 32 ¢
Phoenix, White, Nos. 8 to 12, 24¢; No. 7, 21½¢; No. 6, 25½¢.
Silver Lake:
A quality, Drab.....40 ¢
A quality, White.....35 ¢
B quality, Drab.....35 ¢
B quality, White.....30 ¢
Italian Hemp.....40 ¢
Linen.....57½¢

Wire, Picture—

List Oct., '00.....
85¢10¢10@85¢10¢10¢5%
Hendryx Standard Wire Picture Cord, 85&10&5%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, gr. 5½@6¢
Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.: (Case lots, 20%)
Jumbo Crayons.....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Zelnicker's Lumber:
Red, Blue, Green.....per gro. $6.50
Black.....per gro. $4.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy.....per doz. $7.00
Fort Madison, Light.....per doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847..per doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....per doz. $3.00
Wm. Rogers & Son.....per doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	36

Dixon's.....per doz. 30&10@40%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....per doz. 33⅓@40%

Nos.	305	310	312	320	3?2
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....40%
New Triumph No. 605, per doz. $24.00..30&10@40%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....per doz. 30&10@40%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....per doz. $3.00
Combined Slaw Cutter and Corn Grater.....per doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..per gr. $18@$20
Slaw Cutters, 2 Knife..per gr. $22@$36

Tobacco—

All Iron, Cheap..doz. $1.25@$1.50
Enterprise.....25@30%
National, per doz., No. 1, $21; No. 2, $18.....40%
Sargent's, per doz., No. 2.....60
Sargent's, Nos. 12 and 21.....60&10%

Washer—

Appleton's, per doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz. $9.00
Iwan's Imp'ved Post Hole Auger 10&5%
Iwan's Vaughan Pattern Post Hole Augers.....per doz. $6.25
Iwan's Perfection Post Hole Diggers.....per doz. $8.25
Iwan's Split Handle Post Hole Diggers.....per doz. $7.25
Kohler's Universal.....per doz. $15.00
Kohler's Little Giant.....per doz. $12.00
Kohler's Hercules.....per doz. $10.00
Kohler's Invincible.....per doz. $9.00
Kohler's Rival.....per doz. $8.00
Kohler's Pioneer.....per doz. $7.25
Never-Break Post Hole Diggers, doz., $24.00.....60
Samson, per doz. $34.00.....25

Dividers—See *Compasses.*

Doors, Screen—

Phillips', style E, 7s in.....per doz. $10.00
Phillips', style 077, 7s in.....per doz. $7.50
Phillips', style x-y, 7s in.....per doz. $10.50

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, per doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—

Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P. S. & W.....10&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....10%
Johnson's Drill Points.....10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25
Ratchet, Parker's.....40
Ratchet, Weston's.....35%
Ratchet, Whitney's, P. S. & W.....50
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓

Twist Drills—

Bit Stock.....60&10@60&10&10%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@60¢
Balsey's Screw Holder and Driver, per doz., 2½-in., $6; 4-in., $7.50; 6-in., $9.....40
Buck Bros.' Screw Driver Bits.....30
Champion.....50
Edson.....60
Fray's Hol. H'dle Sets, No. 3, $12..50
Gay's Double Action Ratchet.....60
Goodell's Auto..50&10&10@50&10&10&5
Hurwood.....40
Mayhew's Black Handle.....40
Mayhew's Monarch.....40&10
Millers Falls, Nos. 20 and 21...25&10
Millers Falls, Nos. 11, 12, 41, 42..15&10
Never Turn.....60
New England Specialty Co.....50%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5
H. D. Smith & Co.'s Perfect H'dle.40
Stanley R. & L. Co.'s:
No. 64, Varn. Handles.....65
No. 86.....75
Victor.....35
Defiance.....70%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 38 and 45.....20&10&10%

Eave Trough, Galvanized—

Territory.	*L. C. L.*
A. Eastern	.80&7½%
B. Eastern	.80&12½%
Central	.80&7½%
Southern	.70&20&10%
S. Western	.75&12½%

Terms.—2% for cash. Factory shipments generally delivered
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments:
Plain Rd., and Rd., Cor., 2, 3 and 4 in.....75
Plain Rd., and Rd., Cor., 5 and 6 in.....60
Perfect Elbows (S., S. & Co.).....40

Emery, Turkish—

	4to6	*5½ to 180 Flour*
Kegs.....lb.	5 ¢	5½¢ 3½¢
½ Kegs.....lb.	5½¢	5¾¢ 3¾¢
¼ Kegs.....lb.	5½¢	6 ¢ 4 ¢
10-lb. cans, 10 in case....	6½¢	7 ¢ 6 ¢
10-lb. cans, less than 10.....	*10 ¢*	*10 ¢ 8 ¢*
Less quantity..	*10 ¢*	*10 ¢ 8 ¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice

—See *Squeezers, Lemon.*

Fasteners, Blind—

Z'mmerman's.....50&10%
Walling's.....45%

Cord and Weight—

Ives.....40%

Faucets—

Cork Lined.....50@50&10%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined....50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List revised Nov. 1, 1899.
Best Brands.....70&10@75&5%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103.....$4.00
Special, No. 104.....$4.00
Fusible Links.....$0.25
Expansion Bolts.....50&10%

Grindstone—

Net Prices:

Inch	*15*	*17*	*19*	*21*	*24*
Per doz	*$2.15*	*2.85*	*3.25*	*3.75*	*4.50*

P. S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....70%
Stowell's Giant Grindstone Hanger, ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures, Light.....60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} Extra 5% and 10%

Gates, Molasses and Oil—

Stebbins' Pattern.80&10@80&10&5%

Gauges—

Marking, Mortise, &c.....50&10&5@50&10&10&5%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P. S. & W. Co.....30&10%

Gimlets— Single Cut—

Numbered assortments, per gro.

Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush..25@50%
Cans (½ pts., pts., qts., ½ gal., gal.).....25@48%
International Glue Co. (Martin's)....40&10%

Grease, Axle—

Common Grade....gro. $4.50@5.50
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00
Pike Mower and Tool Grinder, each.....$6.00
} 33⅓%
Velox Ball Hearing, Mounted, Angle Iron Frames, each.....$3.25

Halters and Ties—

Covert Mfg. Co.:
Web.....45%
Jute Rope.....50&5%
Sisal Rope.....35&5%
Cotton Rope.....45&2%
Hemp Rope.....45&2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters.....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.70%
Sisal Rope Ties.....60&10%

Hammers—

Handled Hammers—

Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&7⅛@33⅓&10&7⅛%
Engineers' and B. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50¢.....80&10&10@85%
3 to 5 lb., per lb. 40¢.....80&10&10@85%
Over 5 lb., per lb 30¢..85@85&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—

Agricultural Tool Handles

Axe, Pick, &c.....60&5@60&10&5%
Hoe, Rake, &c.....45@50&5%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted...gro. $2.50@2.85
Brad Awl.....gro. $1.65@1.85
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....$2.40@2.65
Hickory Tanged Firmer, gro. assorted.....$2.15@2.40
Apple Socket Firmer, gro. assorted.....$1.75@1.95
Hickory Socket Firmer, gro. assorted.....$1.45@1.60
Hickory Socket Framing, gro. assorted.....$1.60@1.75
File, assorted.....gro. $1.30@1.40
Hammer, Hatchet, Axe, &c...60&10@60&10&10%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished..65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle....℔ gro. $0.85@$1.50

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Single Doz.	*$0.90*	*1.25*	*1.60*	*1.95*	*2.50*

Barn Door, New England Pattern, Check Back, Regular:

Inch	*3*	*4*	*5*	*6*
Single Doz.	*$1.30*	*1.85*	*2.50*	*3.00*

Allith Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $9.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10&5%
Roller Bearing.....70&5%
Griffin Mfg. Co.:
Solid Axle, No. 19, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.60&10&2½%
Hinged.....net, $6.40
Covered.....60&10%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....70&5%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
Peerless.....70&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.15
Ball B'r'g St'l Track No. 10.$2.40
Roller B'r'g St'l Track No. 12,$2.30
Ball B'r'g St'l Track No. 13.$2.40
Roller B'r'g St'l Track No. 14,$2.30
Hero, Adj. Track No. 19.....50%
Adjustable Track Tandem Trolley Track No. 16.....50%
Seal, Steel Track No. 8.....$2.40
Auto Adj. Track No. 22..40&10%
Trolley B. D. No. 17.....$1.40
Trolley F. D. No. 120.....$2.35
Trolley F. D. No. 121.....$2.45
Trolley F. D. No. 150.....$2.60
Safety Underwriters F. D. No. 101.....$2.25
Tandem No. 44.....70&5%
Trolley F. D. No. 151.....$3.00
Palace, Adjustable Track No. 132.....40&10%
Royal, Adjustable Track No. 122.....40&10%
Ives' Wood Track No. 1.....$2.15
Trolley B. D. No. 20.....$1.35
Trolley B. D. No. 21.....$1.45
Trolley B. D. No. 27.....$1.50
Trolley B. D. No. 28.....$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70&5%
Anti-friction No. 42.....60&10%
Hinged Tandem No. 48.....60%
Folding Door B. B. Swivel No. 135.....30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....50&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives Wood Track.....60&10%
L. T. Roller Bearing...60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet.....50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%
For Track, see Rail.

Extra 5@10% often given.

Hangers— Garment—

Pullman Trouser, No. 1....℔ gro. $9.00
Pullman Trouser, No. 4....℔ gro. $24.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Hasps—

McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first quality.40@7½%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70@75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 and 13..75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 66.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5.....75&10&5%
Tip Pat'n, Nos. 1, 3 & 5...75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'es	*$2.00*	*2.70*	*5.00*
Hinges only	*1.40*	*2.05*	*3.80*
Latches only	*.70*	*.70*	*.35*

New England:
With Latch.....doz. ....@$2.00
Without Latch...doz. ....@$1.60
Reversible Self-Closing:
With Latch.....doz. ....@$1.75
Without Latch...doz. ....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets.

Nos.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback Cast Iron.....gro. $9.00@$9.50
Non-Holdback, Cast Iron.....gro. $8.00@$8.50

J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....50%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....$9.00
Chief Ball B'r'g Floor Hinge.50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea, No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

Hangers— Garment—

Pullman Trouser, No. 1....℔ gro. $9.00
Pullman Trouser, No. 4....℔ gro. $24.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Hasps—

McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first quality.40@7½%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70@75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 and 13..75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 66.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5.....75&10&5%
Tip Pat'n, Nos. 1, 3 & 5...75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

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With Latch.....doz. ....@$2.00
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Reversible Self-Closing:
With Latch.....doz. ....@$1.75
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With Latch.....doz. $1.75
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Shepard's or Clark's, doz. sets.

Nos.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback Cast Iron.....gro. $9.00@$9.50
Non-Holdback, Cast Iron.....gro. $8.00@$8.50

J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....50%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....$9.00
Chief Ball B'r'g Floor Hinge.50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea, No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:

Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges...65%
Heavy T Hinges...60%
Extra H'y T H'g's...70&10%
Hinge Hasps...50%
Cor. Heavy Strap...75&5%
Cor. Ex. Heavy T...70&10%
(Extra 10@10&5%)

Screw Hook and Strap. 6 to 12 in..lb. 3½c; 1½ to 20 in..lb. 3¼c; 22 to 36 in..lb. 3 c

Screw Hook and Eye:
¾ to 1 inch...lb. 6 ¢
⅝-inch...lb. 7 ¢
½-inch...lb. 9 ¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers....35%

Hods— Coal—

	Per doz.			
Inch	15	16	17	18
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3.60	3.90
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar...each $1.45
Steel Brick...each $1.10

Hoes— Eye—

Scovil and Oval Pattern...60&10@60&10&10%
Grub, list Feb. 23, 1899...70&10@75&10%
D. & H. Scovil...35%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz...70&10%
Ft. Madison Mattock Hoes:
Regular Weight...℔ doz. 66⅔%
Junior Size...℔ doz. $4.00
Ft. Madison Sprouting Hoe...℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe...75&10&7½%
Kretsinger's Cut Easy...70&10%
Warren Hoe...45&10%
W. & C. Ivanhoe...75&2%
B. B. 6 in., Cultivator Hoe...$3.15
B. B., 6½ in...$3.35
Acme Wedding...℔ doz., net, $4.35
W. & C. L'ning Shuffle Hoe, ℔doz.$4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00...45&10%

Door—

Empire...50%
Bardsley's...45%

File and Tool—

Nicholson File Holders and File Handles...33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz...$1.25

Hooks—Cast Iron—

Bird Cage, Reading...60%
Bird Cage, Sargent's List...60&10%
Ceiling, Sargent's List...50&10&10%
Clothes Line, Reading List...60&10%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's...70%
Coat and Hat, Reading...45&20%
Coat and Hat, Stowell's...70%
Coat and Hat, Wrightsville...65%
Harness, Reading List...66⅔%
Harness, Stowell's...60%
School House, Stowell's...70%

Wire—

Belt...80&10@..%
Wire C. & H. Hooks...75&10@75&10&5%
Atlas, Coat and Hat:
Single Cases...75%
10 Case Lots...75&10%
Columbian Hdw. Co., Gem...60&10%
Parker Wire Goods Co., King...75&10%
Van Wagoner, Coat and Hat...70%
Western W. G. Co, Molding...75%
Wire Goods Co.:
Acme...60&10%
Chief...70%
Crown...70&10%
Czar...65%
V Brace...70&10%
Czar Harness...50&10%

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton...doz. $1.05@$1.25
Wrought Staples, Hooks, &c.— See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Hush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.50
Grass, common grades, all sizes, per doz...$1.30
Whiffletree...lb. 3¾@6¢
Hooks and Eyes:
Brass...60&10&5@60&10&10%
Malleable Iron..70&10@70&10&10%
Covert Mfg. Co, Gate and Scuttle Hooks...35%
Covert Saddlery Works' Self Locking Gate and Door Hook...60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net

Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition...ft. 5 @ 6 ¢
3-ply Standard...ft. 8 @ 9 ¢
4-ply Standard...ft. 10 @11 ¢
3-ply extra...ft. 11 @13 ¢
4-ply extra...ft. 14 @16 ¢
Cotton Garden, ¾-in., coupled:
Low Grade...ft. 8 @ 9 ¢
Fair Quality...ft. 10 @11 ¢

Irons—Sad—

From ¼ to 10...lb. 2¾@3 ¢
B. B. Sad Irons...lb. 3¼@3½¢
Chinese Laundry...lb. 4¾@5 ¢
Chinese Sad...lb. 4 @4¼¢
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	62	59	72	69
Tin'd Tops	65	62	75	72

New England Pressing..lb. 3¾@4¢

Pinking—

Pinking Irons...doz. 50@60¢

Soldering—

Soldering Coppers, 2½ & 3..20@21¢
1½ & 2...22@23¢

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw...30&5%
Steel...45&2%
Covert's Saddlery Works:
Daisy...60&10%
Victor...60%
Lockport...50%
Lane's Steel...30&10&5%
Richards' Tiger Steel, No. 130...40%

Kettles—

Brass, Spun, Plain...20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c...30%
Smith & Hemenway Co...40&10%
Wilkinson Shear & Cutlery Co....50%

Corn—

Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List...70&10@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42...60%
Ohio Tool Co.'s...70%
Swan's...70&10&2½%
Watrous...16⅔%
L. & I. J. White...20&5@25%

Hay and Straw—

Serrated Edge..per doz.$5.25@5.50
Iwan's Sickle Edge...℔ doz. $9.50
Iwan's Serrated...℔ doz. $10.00

Mincing—

Buffalo...℔ gro. $13.00

Miscellaneous—

Farriers'...doz. $3.00@3.25
Wostenholm's...℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber tip...gro.$1.15@1.20
Carriage, Jap., all sizes...gro. 40@45¢
Door, Mineral...doz. 65@70¢
Door, Por. Jap'd...doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's...60&10&10%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Lane's Store...25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112...40%
Climax Shelf, No. 113...40%
Trolley, No. 100...40%

Ladies, Melting—

L. & G. Mfg. Co. (low list)...25%
P. S. & W...50%
Reading...60%
Sargent's...50&10%

Lanterns—Tubular—

Regular Tubular, No. 0...doz. $4.25@4.85
Lift Tubular, No. 0...doz. $4.50@5.15
Hinge Tubular, No. 0...doz. $4.50@5.15
Other Styles...40&10@40&10&5%

Bull's Eye Police—

No. 1, 2¾-inch...$2.50@2.75
No. 2, 3-inch...$2.75@3.00

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron...50%
Stowell's Badger, Cast Iron...50%

Latches— Thumb—

Roggin's Latches, with screw..doz. 35@40¢

Door—

Richards' Bull Dog, Heavy, No. 125.40%
Richards' Trump, No. 127...50%

Leaders, Cattle—

Small...doz. 50¢; *large*, 60¢
Covert Mfg. Co...35%

Lifters, Transom—

R. & E...33⅓%

Lines—

	Wire Clothes, Nos.	18	19	20
100 feet		$2.20	2.00	1.65
75 feet		$1.80	1.70	1.30

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50...℔ gr. 20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50...20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50...20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25...20%
Anniston Waterproof Clothes, 50 ft., ℔ gro., $24.00; Gilt Edge, $22.00; Air Line, $22.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albemarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Allston, $12.50; Calhoun, $11.00.

Locks— Cabinet—

Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co...45&20%
R. & E. Mfg. Co...40%
Sargent & Co...40&10%
Stowell's Steel Door Latches...50%

Elevator—

Stowell's...½%

Padlocks—

Wrought Iron...75&10&5@80&5%
R. & E. Mfg. Co. Wrought Steel and Brass...75@75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass...62½%
Crescent...50&10%
Iron...62½%
Window Ventilating...60%
Robison Patent Ventilating Sash Lock...40%
Wrought Bronze and Brass...55%
Wrought Steel...55%
Pullman Patent Ventilating Lock..25%
Reading...60%

Machines—Boring—

Com. Upr't, without Augers..$2.00
Com. Ang'l'r, without Augers.$2.25
Without Augers.

R. & E. Mfg. Co.:	Upright.	Angular.
Improved No. 3..	$4.25	No. 1..$5.00
Improved No. 4..	3.75	No. 2.. 3.38
Improved No. 5..	2.75	

Jennings', Nos. 1 and 4...35&5%
Millers' Falls...5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—

Reisinger Invincible Hand Power....℔ doz. $18.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Differential Pulley Block...30%
Moore's Hand Hoist, with Lock Brake...20%

Ice Cutting—

Chandler's...12½%

Washing—

Boss Washing Machine Co.: Per doz.
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1...48.00
Standard Perfection...26.00
Cinti Square Western...30.00
Uneeda American, Round...29.00

Mallets—

Hickory...45&5@50%
Lignumvitæ...45&5@50%
Tinners' Hickory and Apple-wood...doz. 45&5@50%

Mangers, Stable—

Swett Iron Works...50%

Mashers, Vegetable—

Western, W. G. Co., Potato....60&10%

Mats, Door—

Elastic Steel (W. G. Co.)...10%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co...25@30%
National list Jan. 1, 1902...30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side...50&10@60%
Swift, Lane Bros. Co...30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheap...*all sizes, $1.75@2.00*
Good...*all sizes, $2.25@2.50*

	10	12	14	16-in.
High Grade	4.25	4.50	4.75	5.00

Continental...60&5%
Great American...70%
Great American Ball B'r'g, new list.70%
Quaker City...70%
Pennsylvania...60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf...50%
Pennsylvania Horse...33⅓&5%
Pennsylvania Pony...40&5%
Philadelphia:
Styles M., S., C., K., T...70&5%
Style A, all Steel...60&5%
Style E, High Wheel...70&10&5%
Drexel and Gold Coin, special list.50%

Nails—

Wire Nails and Brads, Papered, List July 20, 1899..85&10&10@90%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...10&5%
Champlain	28	26	25	24	23	...60%
Coleman	13	12	12	11	11	...net
New Haven	23	21	20	19	18	...40&5%
Putnam	23	21	20	19	18	...33⅓%
New Putnam	19	18	17	16	16	...10&5%
Western						...℔ lb 3½c

Jobbers' Special Brands...per lb. 8½@10¢

Picture—

	1½	2	2½	3	3½ in.
Brass H'd	.45	.55	.60	.70	...gro
Por. Head	1.10	1.10	1.10		...gro

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, plain...$5.00
Hexagon, plain...$5.10
Square, C. T. & R....$5.10
Hexagon, C. T. & R....$5.80
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank...$5.10
Hexagon, Blank...$5.80
Square, Tapped...$5.10
Hexagon, Tapped...$5.80

Oakum—

Best or Government...lb. 6½¢
Navy...lb. 5 ¢
U. S. Navy...lb. 6 ¢
Plumbers' Spun Oakum...2½¢
In carload lots ¼¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper...50&10%
Tin or Steel...65&10%
Zinc...65&10%
Chase or Paragon:
Brass and Copper...50&10%
Tin or Steel...65&10%
Zinc...65&10%
Malleable, Hammers' Imp'ed, No. 1, $3.60; No. 2, $4; No. 3, $4.40...℔ doz. 20
Malleable, Hammers' Old Pattern, same list...50&10%
American Tube & Stamping Co.:
Spring Bottom Cans...70&10&10%
Railroad Oilers, &c...60@60&10%

Openers— Can—

	Per doz.
Sprague, Iron Handle	30@35¢
Sprague, Wood Handle	35@40¢
Sardine Scissors	$1.75@$3.00
National	50%
Stowell's Sprague	℔ doz. 35@45¢

Egg—

Nickel Plate...℔ doz., $2.00
Silver Plate...℔ doz., $4.00

Packing—

Asbestos Packing, Wick and Rope...lb. 14@16¢

Rubber—

(Fair quality goods.)

Sheet, C. I	80@10¢
Sheet, C. O. S	90@12¢
Sheet, C. B. S	100@14¢
Sheet, Pure Gum	50&10&5¢
Sheet, Red	40&10&5¢
Jenkins' '96, ℔ lb 80¢	25&25&5

Miscellaneous—

American Packing...lb. 7@10 ¢
Cotton Packing...lb. 16@25 ¢
Italian Packing...lb. 9@12½¢
Jute...lb. 4@ 5½¢
Russia Packing...lb. 8@11 ¢

Pails, Creamery—

S. S. & Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.50&10@60&10&12½%

Fry—

Common Lipped:

	1	2	3	4	5
Nos.					
Per doz.	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

	12	14	16	18
Inch				
Per doz.	$1.95	2.25	2.80	3.75

Roasting and Baking—

Regal, S., S. & Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	110	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper

	lb.
Asbestos:	
Building Felt	2¾¢
Mill Board, sheet, 40x40 in.	3½¢
Mill Board, roll, thicker than 1-16 inch	3½¢
Mill Board, 1-16 inch thick and less	2½¢
	Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll	$5[illegible]
Medium weight, 30 lbs. to roll	40@[illegible]
Heavy weight, 40 lbs. to roll	$6[illegible]
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.35.	
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton	$38.00@[illegible]
Red Rope Roofing, 250 sq. ft. per roll	$1.75

Tarred Paper—

1 ply (roll 300 sq. ft.), ton.... $32.50@35.50
2 ply, roll 108 sq. ft.....55@60¢
3 ply, roll 108 sq. ft.....78@85¢
Slater's Felt (roll 500 sq. ft.).75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—

Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h.50&10@60%

Parers— Apple—

Advance .....℔ doz. $4.00
Baldwin .....℔ doz. $1.00
Bonanza Improved.....each $6.50
Daisy .....℔ doz. $4.00
Handy .....each $7.50
Enresa Improved.....each $20.00
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
Little Star.....℔ doz. $5.00
New Lightning.....℔ doz. $7.00
Reading 72.....℔ doz. $3.25
Reading 78.....℔ doz. $6.25
Rocking Table.....℔ doz. $6.20
Turn Table '98.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00

Potato—

Saratoga .....℔ doz. $7.00
White Mountain.....℔ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899.....70&65@75%
Cronk's Handled Garden Mattock, ℔ doz., $6.40.....33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass .....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—

Carload lots.
Standard, 2-6 in.....60%
Extra Heavy, 2-6 in.....70%
Fittings 75%

Pipe, Merchant—

Carload Lots.

	Steel. Blk.	Steel. Galv.	Iron. Blk.	Iron. Galv.
⅛ & ¼ in.	68%	52%	66 %	50 %
⅜ & ½ in.	72%	60%	70 %	58 %
¾ to 6 in.	76%	66%	73½%	64½%
7 to 12 in.	71%	56%	69½%	54 %

Pipe, Sewer—

Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....71%
New York and New Jersey.74½%
Maryland, Dclaware, E. Pa.78%
West. Pa. and West Va...80%
Virginia 76%
Ohio, Michigan and Ky....80%
Indiana 80%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—

Wood Planes—

Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding .....33⅓&10%
Bailey's (Stanley R. & L. Co.)....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's 60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union 60%

Iron Planes—

Bailey's (Stanley R. & L. Co.)....40%
Chapin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's .....60&10%
Union 60%

Plane Irons—

Wood Bench Plane Irons.....25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union 35%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse.....℔ doz. $8.50

Plates—

Felloe .....lb. 3¾@4¼¢
Self-Sealing Pie Plates (S., S. & Co.), ℔ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers.....75&10@80%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50@50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's 60%
Improved Button.....60&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers .....30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable .....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1-lb. papers, lb. 8½@9 ¢
½-lb. papers.....lb. 9 @9½¢
¼-lb. papers.....lb. 9¾@10¼¢

Pokes, Animal—

Ft. Madison Hawkeye.....℔ doz. $3.25
Ft. Madison Western.....℔ doz. $4.00

Police Goods—

Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.72.....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25; ℔ gro. $12.00.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75; ℔ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ℔ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....℔ doz. $1.00
Black Silk, 5 oz. box.....℔ doz. $0.75
Black Silk, ½ pt. liq.....℔ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt.. Square.....gro. $11.00
2 qt., Square.....gro. $13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled 40%
Tinned 35%

Powder—

In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk).	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17.00
Half case 12 (1 lb c. bk)..	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, ℔ doz., $20.00.....50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Pelican, ℔ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ℔ doz. $6.00
Diamond B, No. 3, case lots..... ℔ doz. $5.50
Giant No. 1, ℔ doz. $18; No. 2, $16.50; No. 3, $15.....40%

Pulleys, Single Wheel—

	Inch	*1½*	*1¾*	*2*	*3*
Awning or Tackle, doz.		*$0.30*	*.35*	*.60*	*1.05*
Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55					
Inch		2	2½	2½	
Hot House, doz.		*$0.65*	*.85*	*1.20*	
Inch		*1¼*	*1½*	*1¾*	*2*
Screw, doz.		*$0.16*	*.19*	*.23*	*.30*
Inch		*1¾*	*2*	*2¼*	*2½*
Side, doz.		*$0.25*	*.30*	*.55*	*.61*
Inch		*1½*	*1¾*	*2*	*2½*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in.....16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal .....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern .....60@60&10%
Pitcher Spout.....80@80&5%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $7.20
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list) .....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$7.20
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

	Inch...	*2*	*2¼*	*2½*	*2¾*
		$2.20	*2.50*	*2.75*	*3.00*
	Inch...	*3*	*3¼*	*3½*	*3¾*
		$3.30	*3.60*	*3.85*	*4.10*

Plunger Cup Leathers—Per 100:

Inch...	*2½*	*3*	*3½*	*4*
	$2.75	*3.85*	*5.00*	*6.00*

Punches—

Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality .....$1.75@2.00
Revolving (4 tubes)..... doz. $3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's No. 1 (A.B.C.), ℔ doz. $15.50
No. 2, ℔ doz. $22.50.....50%
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co.35@35&5%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....60%

Rail—Barn Door, &c.—

Cast Iron Barn Door; Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾ in.	
$2.50	*$3.00*	*$4.40*	*100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*	
$2.00	*$2.70*	*$3.60*	*100 feet.*

Sliding Door, Painted Iron..... 2½@2¾¢
Sliding Door, Wrought Brass, 1½ in., lb., 36¢.....30%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ℔ ft. 5½¢
No. 2, Reliable Hgr. Track, ℔ ft. 7¢
Cronk's:
Double Braced Steel Rail....℔ ft. 3¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.70; 1¼ in., $4.40.
O. N. T., ℔ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.40.
New York, 1 x 3-16 in., ℔ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢.....50%
None Better.....℔ ft. 3⅜¢
Standard .....℔ ft. 4 ¢
Myers' Stayon Track.....60%
Richards' Mfg. Co.:
Common 1 x 3-16 in., $2.75; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail.....$4.40
Fire Door Track, ℔ ft., 2½ x ⅝, 15¢; 3½ x ⅝, 9¢.
Lag Screw Rail, No. 65.....40%
Gauge Trolley Track, ℔ ft., No. 31, 10¢; No. 32, 15¢; No. 33, 24¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard 60%
Stowell's:
Cast Rail.....℔ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....℔ ft. 3¢
Wrought Bracket, 1⅛ x 5-16..℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢.....60%
P. L. B. Steel Rail.....℔ 100 ft. $3.00
No. 0, 1 x 3-16.....℔ 100 ft. $2.75

Rakes—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net.....$4.25
Cronk's:
New Champion Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00....75&25%
Queen City Lawn, ℔ doz., 20 teeth, $3.45; 24, $3.60.....
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....℔ doz. $3.45
Lawn Queen, 24-tooth.....℔ doz. $2.90
Paragon, 20-tooth.....℔ doz. $2.75
Paragon, 24-tooth.....℔ doz. $3.00
Steel Garden, 14-tooth....℔ doz. $2.88
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—

Disston's 75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—

Borasic 60%
Fox Razors, No. 42...℔ doz. $20.00 } 40% Dis.
Fox Razors, No. 44...℔ doz. $20.00 } 40% Dis.
Fox Razors, No. 62, Platina... ℔ doz. $25.00 } 40% Dis.
Red Devil.....60%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Silberstein 40%

Reels, Fishing—

Hendryx: M 6, Q 6, A 6, B 6, M 9¾, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled, Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*

Black Jap.....75%
Bronzed 75%

Revolvers—

Single Action.....95¢@$1.00
Double Action, except 44 cal..$1.85
Double Action, 44 caliber....$2.00
Automatic $3.45
Hammerless $4.00
NOTE.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade

16 in.....per doz. $2.25@$2.50
17 in.....per doz. $2.50@$2.75
18 in.....per doz. $2.75@$3.00

Rings and Ringers—

Bull Rings—

	2	*2½*	*3 inch.*
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ℔ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... doz. 50@55¢
Hill's Ringers, Malleable Iron.. doz. 70@75¢
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—

Copper .....50&10@60%
Iron or Steel.....75@75&5%

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....72¢
Cronk's Brinkerhoff.....90¢
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.50%
O. K. Adj. and Reversible No. 58.50%
Lag Screw, Nos. 55 and 57.....50%
Fire Door, No. 59.....40%
Favorite, No. 54.....40%
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....℔ doz. 65¢
Hinge Adjustable Stay.....℔ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger:
Pure .....lb..11¾@12¢
Sisal, 7-16 in. diam. and larger:
Mixed .....lb..8@8¼¢
Pure .....lb..9½@9¾¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed .....lb..7¾@8¢
Pure .....lb..9½@9¾¢

Sisal, Tarred, Medium Lath Yarn:
Mixed .....lb. 7¾¢
Pure .....lb. 9@9¼¢
Cotton Rope: Lb.
Best, ¼-in. and larger.....16¢
Medium, ¼-in. and larger...14¢
Common, ¼-in. and larger.10½¢
Jute Rope:
*Thread No. 1, ¼-in. & up, lb.*6½¢
*Thread No. 2, ¼-in. & up, lb.*5¾¢
Old Colony Manila Transmission Rope .....℔ lb 17½¢

Wire Rope—

Galvanized .....42½&2½%
Plain .....50&2½%

Ropes, Hammocks—

Covert Mfg. Co.:
Jute .....50&5%
Sisal .....35&5%
Covert Saddlery Works.....60&5%

Rules—

Boxwood .....60&10&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60@60&10%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Combination .....55@55&10%
Stationers' .....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag.....40%
Zig Zag, Pin Joint.....42½%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—

See *Balance, Sash.*

Sash Locks—

See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 50%
Band .....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&5%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide.....60%
Band, ¾ to 1¾.....60%
Crosscuts 50%
Narrow Crosscuts.....55%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....50%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....35%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—

Atkins' Hack Saw Blades A A A..35%
Disston's:
Concave Blades.....25%
Keystone 40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....35%
Sterling Hack Saw Frames....30&10&5%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—

Covert's Saddlery Works.....60&10%

Scales—

Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. .....*doz. $5.50*
Two Platforms, ½ oz. to 8 lbs. .....*doz. $16.00*
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list)..25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

Scrapers—

Box, 1 Handle.....*doz. $2.00@2.25*
Box, 2 Handle.....*doz. $2.60@2.85*
Ship....*Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....45%
Chapin-Stephens Co., Box....50@50&10%

Screens, Window and Frames—

Air Line Pattern Screens.....60&10%
Flyer Pattern Screens..60&10@60&10&5%
Maine Screen Frames.....40&10&5%
Perfection Screens.....60&10@60&10&5%
Phillips' Screen Frames...60&5@60&10%
See also *Doors.*

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75
Bench, W'd, Beech.doz. 30@30&5%
Hand, Wood.....*30@30&5%*
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—

Lag, Cone Point, list Oct. 1, '99 .....*75&20%*
Coach, Gimlet Point, list Oct. 1, '99.....*75&15%*
Hand Rail, list Jan. 1, '81....*70&10@75%*

Jack Screws—

Standard List.....*75&10@80&5%*
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P. S. & W.....50@50&5%
Sargent .....70&10%
Swett Iron Works.....75&10@80&5%

Machine—

List Jan. 1, '98:
Flat or Round Head, Iron....*50@50&10%*
Flat or Round Head, Brass....*50@50&10%*

Set and Cap—

Set (Iron or Steel).80@80&10&10%
Sq. Hd. Cap.....*75@75&10%*
Hex. Hd. Cap.....*75@75&10%*
Rd. or Fillister Hd. Cap.....*65@65&10%*

Wood—

List July 23, 1903.
Manufacturers' printed discounts:
Flat Head, Iron.....*87½&10@..%*
Round Head, Iron...*85 &10@..%*
Flat Head, Brass....*85 &10@..%*
Round Head, Brass..*80 &10@..%*
Flat Head, Bronze...*77½&10@..%*
Round Head, Bronze.75 &10@..%
Drive Screws.....*87½&10%*

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.
Prices announced for next season:
Clipper Pattern, Grass.....*$6.20*
Full Polished, Clipper.....*$6.75*
Grain *$8.00*
Clipper, Grain.....*$8.25*
Weed and Bush.....*$6.25*

Seeders, Raisin—

Enterprise .....25@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets:
Wood Handle, 10 Awls, doz.$2.00
Wood Handle, 14 Awls, 6 Tools .....*doz.$2.40*
Aiken's Sets, Awl and Tools:
No. 20, ℔ doz. $10.00.....50&10&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel.....℔ doz sets $9.00

Nail—

Square .....*per gro. $2.25@2.50*
Round, Blk. and Pol., assorted. gro. $1.80@2.00
Octagon .....*gro. $3.50@3.75*
Buck Bros.....37½%
Cannon's Diamond Point, ℔ gro. $12...25%
Mayhew's .....℔ gro. $9.00
Snell's Cannon's Diamond Point....
.....℔ gro. $7.20
Snell's Cor'gated, Cup Pt...℔ gro. $7.20
Snell's Knurled, Cup Pt....℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.℔ gro. $7.50

Rivet—

Regular list.....*75@75&10%*

Saw—

Aiken's:
Genuine .....50&10%
Imitation .....50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate 20%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.65....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 96, $15.63.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal, Cross-Cut.....℔ doz. $8.50
Royal, Hand.....℔ doz. $5.00
Taintor Positive.....℔ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30.....
℔ doz., net, $24.00

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%

Shaves, Spoke—

Iron .....*doz.$1.10@1.25*
Wood .....*doz. $1.75@2.25*
Bailey's (Stanley R. & L. Co.)....45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ℔ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—

Cast Iron..	*7*	*8*	*9 in.*	
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality, Jap....70&10&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@7"&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Hedge, 1900 list.....45%
Wilkinson's Branch, Lawn & Border.40%
Wilkinson's Sheep, 1900 list.....50%

Tinners' Snips—

Steel Blades.....*20&5@20&10%*
Steel Laid Blades.....*40&10@50%*
Forged Handles, Steel Blades, Berlin.....40@40&10%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Co.....20%

Pruning Shears and Tools

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00.....25%
Disston's Pruning Hook, ℔ doz. $12.00 .....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10@50&20%
Grape .....40&10@50%
Tree Pruners.....75%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller, Hatfield's, Sargent's list .....70&10%
Reading 60%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....45&20%
R. & E. list.....33⅓%
Sargent's list.....50&10%

Shells—Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge .....65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge.25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge..20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....30&10%

Shells, Loaded—

Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron .....per keg *$4.00*
Steel .....per keg *$3.75*
Burden's, all sizes.....℔ keg $3.90

Shot—

Drop, up to B, 25-lb. bag....*$1.65*
Drop, B and larger.....*per 25-lb. bag, $1.90*
Buck, 25-lb. bag.....*$1.90*
Chilled, 25-lb. bag.....*$1.90*

Shovels and Spades—

Association List, Nov. 15, 1902.40%

Sieves and Sifters—

Hunter's Imitation.....*gro. $10.50@11.00*
Hunter's Genuine.....*per gro. $12.00@12.50*
Buffalo Metallic Blued, S. S. Co., ℔ gr.:
14&16 16&18 18&20
$13.20 $13.50 $14.40
Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00.....20%

Sieves, Seamless Metallic

	Per dozen.			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....*doz. $0.90@0.95*
Mesh 20, Nested....*doz. $1.00@1.05*
Mesh 24, Nested....*doz. $1.30@1.40*

Sinks, Cast Iron—

Standard list.....*60@60&10%*
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron.....*80&10@80&10&10%*
Steel .....*40@40&10%*

Slates, School—

Factory Shipments.
"D" Slates.....*50@50&10%*
Eureka, Unexcelled Noiseless..
60&5 tens
Victor A, Noiseless.....
60&5 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German .....*40@40&10%*
Covert Mfg. Co.:
Derby .....30&5&2%
High Grade.....45
Jockey .....30&10
Trojan 45
Yankee .....30&5&2
Yankee, Roller.....30&5&2
Covert's Saddlery Works:
Crown 60
German 60
Model 60
Triumph 60%
Oneida Community:
Solid Swivel.....60%
Sargent's Patent Guarded....66⅔&10%

Snaths—

Scythe *50%*

Snips, Tinners—See *Shears.*

Spoons and Forks—Silver Plated—

Good Quality.....*50&10@60&5%*
Cheap .....*60@60&10%*
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton .....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—

German Silver.....*60@60&5%*
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—

Teas .....*per gro. 45@50¢*
Tables .....*per gro. $0.90@$1.00*

Springs—Door—

Chicago (Coil).....40&10%
Gem (Coil).....20%
Pullman (Coil).....20%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....℔ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.—

1¼ in. and Wider:	*Per lb*
Black	*4@4¼¢*
Half Bright	*4@4¼¢*
Bright	*4½@4¾¢*

Painted Seat Springs:
1½ x 2 x 26.....*per pr. 42¢*
1½ x 3 x 28.....*per pr. 70¢*

Sprinklers, Lawn—

Enterprise .....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron. } *75@75&5%*
Rosewood Hdl. Try Square and T-Bevels .....*60&10&10@70%*
Iron Hdl. Try Squares and T-Bevels .....*40&10@40&10&10%*
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....50%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....*doz. $1.00*
Good Grade.....*doz. $1.25*
Tinned Iron.....*doz. $0.75@1.25*
Iron, Porcelain Lined...*doz. $1.75*

Staples—

Barbed Blind.....*lb. 6@6½¢*
Electricians', Association list..
80&10&10@10%
Fence Staples, Plain, $2.25; Galvanized *$2.55*
Poultry Netting Staples.....
per lb. 3¼@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros.....30
C. & A. Hoffmann's.....40%

Steelyards—....30@30&10%

Stocks and Dies—

Blacksmiths' .....*50@50&10%*
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates.....25%
Gardner Die Stocks No. 1.....50
Gardner Die Stocks, larger sizes....40
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stone—Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots.....℔ gro. $9
One gross or more.....℔ gro. $7
Lots of 10 gross or more...℔ gro. $6

Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.00
Green Mountain S. S. ℔ gro. $6.00
Extra Indian Pond S.S. ℔ gro. $7.50
No. 1 Indian Pond S.S. ℔ gro. $7.00
No. 2 Indian Pond S.S. ℔ gro. $4.50
Leader Red End S. S. ℔ gro. $4.50
Emery and Corundum, 10 in., ℔ gro. $9.00 — 33⅓ %
Pure Corundum, 10 in., ℔ gro. $12
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%

Oil Stones, &c.—

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit 50%
Gem Corundum Axe, Single or Double Grit 55%
Gem Corundum Slips 55%
Gem Corundum Razor Hones 50%
Pike Mfg. Co., 1901 list; ℔ lb.
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 30¢
Lily White Slips 90¢
Rosy Red Slips 90¢
Washita Slips, Extra 80¢
Washita Slips, No. 1 70¢
Washita Slips, No. 2 40¢ — 33⅓ %
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks 33⅓%
Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1, Small. ℔ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in. ℔ lb 80¢ — 33⅓ & 2%
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢
Belgian, German and Swaty Razor Hones 50%
Natural Grit Carving Knife Hones ℔ doz. $3.00
Quick Edge Pocket Knife Hones ℔ doz. $2.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50 — 10%

Stoners, Cherry—

Enterprise 25@30%

Stoppers, Bottle—

Victor Bottle Stoppers ℔ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ℔ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots. 20&10&10%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, St'l Points, doz. 55@60%
Socket doz. $1.75
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00 20%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ℔ doz.
Auditorium, Roller Bearing (26 in. case), Nickel $54.00
Mammoth, Roller Bearing (30 in. case), Nickel $60.00
Marion, Roller Bearing, regular finishes, full Nickel $24.00
Marion Queen, Roller Bearing, full Nickel $24.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller B'r'g, Jap'ned. $20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel $36.00
Monarch Extra, Roller Bearing, (17-in. case), Nickel $36.00
Monarch Extra, Roller Bearing (17-in. case), Japanned $33.00
National Queen, Fancy Veneers. $27.00
Perpetual, Regular B'r'gs, Nkl. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Triple Medal $24.00
NOTE.—Rebates: 50¢ per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks 90&25&5@ ..%
American Cut Tacks 90&20&5@ ..%
Swedes Cut Tacks 90&33&5@ ..%
Swedes Upholsterers' Tacks 90&40&5@ ..%
Gimp Tacks 90&45&5@ ..%
Lace Tacks 90&15&5@ ..%
Trimmers' Tacks 90&33&5@ ..%
Looking Glass Tacks 65&5@ ..%
Bill Posters' and Railroad Tacks 90&45&5@ ..%
Hungarian Nails 80&20&5@ ..%
Common and Patent Brads 80&10&5@ ..%
Trunk and Clout Nails 80&10@ ..%
NOTE.—The above prices are for Straight Weights. An extra 5% is given on Star Weights** and an extra 10&2½% on Standard Weights.****

Miscellaneous—

Double Pointed Tacks 90&6 or 7 cns
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, S., S. & Co.	30-gal. $3.40
Emerald, S., S. & Co.	60-gal. $4.25
Queen City, S., S. & Co.	30-gal. $3.65
Queen City, S., S. & Co.	60-gal. $4.50

Tapes, Measuring—

American Asses' Skin 40&10@50%
Patent Leather 25@30&5%
Steel 40@40&10%
Chesterman's 25@25&5%
Eddy Asses' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list 35@35&5%
Pocket 35@35&5%
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger per 100 lbs. $3.00

Thermometers—

Tin Case 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c. 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Oneida Pattern 75&10@75&10&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor and Oneida 70&10@70&10&5%
O. C. Jump (Blake Pat.) 60&5@60&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ℔ doz. $13.25
No. 3, Rat, ℔ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ℔ doz. $5.25; case of 72 ℔ gro. $4.70 doz.
No. 4, Mouse, ℔ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ℔ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E 1 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ℔ doz. $16.00
Grocery ℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern ℔ doz. $18.50
McKinney Truck each $10.00
Model Stove Trucks ℔ doz. $18.50

Tubs, Wash— No. 1 2 3

Galvanized, per doz. $4.75 5.25 6.00
Galvanized Wash Tubs (S., S. & Co.):
No. 1 2 3 10 20 30
Per doz., net $5.70 6.30 7.20 6.60 7.20 8.10

Twine, Miscellaneous—

Flax Twine:	BC.	B.
No. 9, ¼ and ½-lb. Balls	.22@24¢	
No. 12, ¼ and ½-lb. Balls	.18@20¢	
No. 18, ¼ and ½-lb. Balls	.16@18¢	
No. 24, ¼ and ½-lb. Balls	.16@18¢	
No. 36, ¼ and ½-lb. Balls	.15@17¢	

Chalk Line, Cotton ½-lb. Balls 30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 9½@11¢
Cotton Wrapping, 5 Balls to lb., according to quality. 13½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls 13@14½¢
American 3-Ply Hemp, 1-lb. Balls 13@14½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 8½¢
India 3-Ply Hemp, 1-lb. Balls 8½¢
India 3-Ply Hemp, 1½-lb. Balls. 7@8¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls 9@10¢
Mason Line, Linen, ½-lb. Bls. 46¢
No. 26½ Mattress, ¼ and ½-lb. Balls 37¢
Wool, 3 to 6 ply... B 4¾¢; A 5¢

Vises—

Solid Box 60&10@60&10&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4, $12.50; No. 5, $7.00; No. 6, $10.00; No. 10, $21.50.
Jewelers' No. 7 $4.00
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co. 20@30%
Merrill's 20%
Millers Falls 60&10%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists' 40%
Jewelers' 33⅓%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30 25%
Perfection Saw Clamps, ℔ doz. $5.00
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series 60&5%
No. 870 40%

Wads—*Price per M.*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Dis. 15%
Ely's B. E., 11 and larger $1.70@1.75
Ely's P. E., 12 to 20 $3.00@3.25

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 50@55&10%
Ground 55@60&10%
Plain or Unground 60@65&10%
Country Hollow Ware, per 100 lbs. $2.75@3.00
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 50&20%
Agate Nickel Steel Ware, Specials 60&15%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid 80&10@80&10&10%
Patent 90@90&5%
Coil: ⅞ 1 1⅛ 1¼ *inch.*
10¢ 11¢ 12¢ 13¢ *per box*

Iron or Steel—

Size bolt. 5-16 ⅜ ½ ⅝ ¾
Washers $4.95 4.05 2.75 2.55 2.35
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots per lb. 1¾@2¢

Wedges—

Oil Finish lb. 2.15@2.30¢

Weights—Hitching—

Covert Mfg. Co. 40&2%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District $25.00
Southern Territory $19.00@20.00
Western and Central Districts $20.00@21.00

Wheels, Well—

8-in., $1.50@1.55; 10-in., $1.65@1.70; 12-in., $2.25@2.35; 14-in., $3.40@3.50.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 80&5@80&7½%
10 to 18 80@80&5%
19 to 26 80&10@80&10&5%
27 to 36 80&5@80&10%
Galvanized:
6 to 9 77½@77½&5%
10 to 14 72½@72½&5%
15 to 16 75&7½@75&10&2½%
19 to 26 75&5@75&10%
27 to 36 72½&5@72&7½%
Coppered:
6 to 9 77½@77½&5%
10 to 14 77½@77½&7½%
15 to 18 75&10@75&10&2½%
19 to 26 75&10&5@80%
27 to 36 75@75&5%
Tinned:
6 to 14 77½@77½&7½%
15 to 18 75&5@75&10%
Annealed, Steel and Tinned, on Spools 70&10&10@70&10&10&10%
Brass and Copper on Spools 60&10@60&10&10%
Brass, list Feb. 26, '96 30&5%
Copper, list Feb. 26, '96 15%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, 1903. 90&10&10&10@..%

Wire Cloth and Netting—

Galvanized Wire Netting 80&15@80&17½%
Painted Screen Cloth, 100 ft., $1.20
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3 ¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural 75&10@75&10&10%
Alligator or Crocodile 70&10@75%
Baxter Pattern S Wrenches 70&5@70&10%
Drop Forged S 45@45&5%
Acme 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Briggs Pattern 40%
Combination Black 40&5%
Combination Bright 40%
Merrick Pattern 50%
Boardman's 33⅓%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches 40%
Elgin Monkey Wrench Pipe Jaws 33⅓%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
Improved Pipe (W. & B.) 60%
Solid Handles, P., S. & W. 50@50&5%
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ℔ gross, $7.50; ℔ doz. $0.80

Wrought Goods—

Staples, Hooks, &c., list March 17, '02 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet per 100 lbs. $7.75@8.00

CURRENT METAL PRICES.

MARCH 1, 1905.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:
1 to 1¾ in. round and square } ₩ lb 2.00¢
1½ to 4 in. x ⅜ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ lb 2.2[illegible] ¢
Rods—⅜ and 11-16 round and square ₩ lb 2.20¢
Angles: Cts ₩ lb
3 in. x ¼ in. and larger 2.20¢
3 in. x 3-16 in. and 1/5 in. 2.25¢
1¼ to 2¼ in. x ¼ in. 2.10¢
1½ to 2¾ in. x 3-16 in. and thicker 2.10¢
1 to 1¼ in. x 3-16 in. 2.15¢
1 to 1¾ x ¼ in. 2.20¢
⅞ x ⅛ in. 2.35¢
¾ x ⅛ in. 2.45¢
⅝ x ⅛ in. 3.50¢
⅛ x 2-32 in. 4.00¢
Tees:
1 in. 2.25¢
1¼ in. 2.35¢
1½ to 2½ in. 2.30¢
3 in. and larger 2.40¢
Beams 2.30¢
Channels, 3 in. and larger 2.30¢
Bands—1½ to 6 x 3-16 to No. 8 2.20¢
"Burden's Best" Iron, base price 3.05¢
Burden's "H. B. & S." Iron, base price 2.85¢
"Ulster" 3.10¢
Norway Bars 5.50¢
Norway Shapes 3.80¢

Merchant Steel from Store—

per ₩ lb
Bessemer Machinery 1.90¢
Toe Calk, Tire and Sleigh Shoe 2.00@2.50¢
Best Cast Steel, base price in small lots 7¢

Sheet Iron from Store—

Black.

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₩ lb 2.50	2.60¢
Nos. 18 to 21	₩ lb 2.65	2.80¢
No. 27	₩ lb 2.80	3.10¢
No. 28	₩ lb 2.90	3.20¢

Russia, Planished, &c.

Genuine Russia, according to assortment ₩ lb 11¾@14¢
Patent Planished ₩ lb A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16 ₩ lb, 3.05¢
Nos. 22 to 24 ₩ lb, 3.45¢
No. 27 ₩ lb, 3.90¢
No. 28 ₩ lb, 4.15¢
No. 20 and lighter, 36 inches wide, 25¢ higher.

METALS—

Tin—

Straits Pig ₩ lb 30 @30¼¢

Tin Plates—

American Charcoal Plates (per box.)
Calland Grade:
IC, 14 x 20 $6.45
IX, 14 x 20 7.95
Melyn Grade:
IC, 14 x 20 5.95
IX, 14 x 20 7.20
Allaway Grade:
IC, 14 x 20 5.20
IX, 14 x 20 6.30

American Coke Plates—Bessemer—
IC, 14 x 20 108 lb $4.30
IX, 14 x 20 5.30

American Terne Plates—
IC, 20 x 28 $8.50
IX, 20 x 28 10.50

Copper—

Lake Ingot ₩ lb 16 @16¼¢
Casting ₩ lb 15½@15¾¢
Sheet Copper Hot Rolled, 16 oz. ₩ lb 19¢
" 14 " " " 20¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ lb 23¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

Seamless Brass Tubes—

Stubs' W. G.	Net. ¼	5-16	⅜	7-16	½	9-16	Outside Diameter. ⅝	¾	⅞	1	1¼	1½
4-11	..	..	..	..	..	..	..	..	..	..	18	18
12	..	..	..	..	..	..	24	24	23	23	18	18
13	..	..	..	..	..	..	25	25	23	23	18	18
14	..	..	..	..	..	..	25	25	23	23	19	19
15	..	..	..	..	25	25	25	23	23	23	19	19
16	..	..	26	26	25	25	25	24	23	24	20	20
17	..	29	26	26	25	25	25	23	23	23	21	21
18	49	31	27	27	26	26	26	24	24	24	22	22
19	58	31	27	27	26	26	26	24	24	24	23	23
20	60	31	27	27	26	26	25	24	24	24	24	24
21	62	47	29	28	28	26	25	25	25	25	25	25
22	67	52	31	31	29	29	27	26	26	26	26	26
23	72	57	33	33	31	31	29	29	29	29	29	29
24	77	62	49	44	42	41	40	39	37	36	36	37
25	82	67	52	47	45	43	42	41	40	40	41	42

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	23	25	27	28¢ ₩ ft.

Brazed Brass Tubing.

Discount from List June 6, 1898, 25%.
Bronze and Copper Tubing advance on Brass List 3¢

Roll and Sheet Brass—

Discount from List June 6, 1898, 20%.

Spelter—

Western ₩ lb 6½@6¾¢

Zinc.

No. 9, base, casks, ₩ lb 8 ¢ | Open ₩ lb 8½¢

Lead.

American Pig ₩ lb 4¾@5 ¢
Bar ₩ lb 5¼@5¾¢
Old Lead in exchange, 4¢ ₩ lb

Solder.

½ & ½, guaranteed ₩ lb 19½@20¢
No. 1 ₩ lb 17½@18¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson ₩ lb 8¼@8¾¢
U. S. 8 @8¼¢
Hungarian 7 @7¼¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots ₩ lb 37¢
100-lb lots ₩ lb 35¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper ₩ lb 13¢
Light and Tinned Copper ₩ lb 12¢
Heavy Brass ₩ lb 8¢
Light Brass ₩ lb 7¢
Lead ₩ lb 4½¢
Tea Lead ₩ lb 3¾¢
Zinc ₩ lb 4¼¢
No. 1 Pewter ₩ lb 19¢
No. 2 Pewter ₩ lb 8½¢
Pure Aluminum, sheet ₩ lb 21¢
Cast Aluminum ₩ lb 16¢
Tin Plate Scrap ₩ ton $ @5.00
Wrought Scrap Iron ₩ gross ton $14.00@14.50
Heavy Cast Scrap ₩ gross ton $12.00@12.50
Stove Plate Scrap ₩ gross ton $11.00@11.50
Burnt Iron ₩ gross ton $6.50@7.00

The Metal Worker
Plumber and Steam Fitter

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REPRESENTING THE

STEAM and HOT WATER HEATING
PLUMBING, SHEET METAL
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AN UNRIVALED ADVERTISING MEDIUM

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